

SEQUENCE LISTING

<110> Reed, Steven G.
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 Houghton, Raymond L.
 Sleath, Paul R.
 McNeill, Patricia D.
 Homer, Mary
 Secrist, Heather

<120> COMPOUNDS AND METHODS FOR THE DIAGNOSIS
 AND TREATMENT OF *B. MICROTI* INFECTION

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<140> US

<141> 2001-05-09

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<212> DNA

<213> Babesia microti

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<211> 572

<212> DNA

<213> Babesia microti

<400> 12

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<212> DNA

<213> Babesia microti

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 <213> Babesia microti

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 <213> Babesia microti

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 <211> 1350
 <212> DNA
 <213> Babesia microti

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<211> 263

<212> PRT

<213> Babesia microti

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Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
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Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro
65 70 75 80
Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Ser Ser Glu Arg Phe
85 90 95
Gly Tyr Gln Leu Leu Pro Tyr Ser Arg Arg Ile Val Ile Phe Asn Glu
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Val Cys Leu Ser Tyr Ile Tyr Lys His Ser Val Met Ile Leu Glu Arg
115 120 125
Asp Arg Val Asn Asp Gly His Lys Asp Tyr Ile Glu Glu Lys Thr Lys
130 135 140
Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu Lys Cys Phe Pro Glu Gln
145 150 155 160
Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala Arg Ile Phe Asp Asn Ala
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Ser Thr Ile Ser Ser Lys Tyr Lys Leu Leu Val Asp Glu Ile Ser Asn
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Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala Ala Asp Asn Phe Asp His
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Phe Arg Asn Ile Trp Lys Ser Ile Val Leu Lys Asp Met Phe Ile Tyr
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Cys Asp Leu Leu Leu Gln His Leu Ile Tyr Lys Phe Tyr Tyr Asp Asn
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 Val Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser
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 Gly Thr Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly
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 Gly Trp Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Ser Ser
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 Pro Glu Gln Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala Arg Ile Phe
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 245 250 255
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 <211> 367
 <212> PRT
 <213> Babesia microti

<400> 20

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 Thr Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro
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 Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly
 85 90 95
 Trp Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Ser Ser Glu
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 260 265 270
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 305 310 315 320
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 Thr Glu Ile Thr Lys Ile Thr Lys Val Ser Asn Val Ile Ile Pro Gly
 340 345 350
 Ile Lys Ala Leu Thr Leu Thr Val Phe Leu Ile Phe Ile Thr Lys
 355 360 365

<210> 21

<211> 492

<212> PRT

<213> Babesia microti

<400> 21

Met Tyr Lys Ile Lys Ile Ser Asp Tyr Ile Ile Glu Phe Asp Asp Asn

1	5	10	15
Ala Lys Leu Pro Thr Asp Asn Val Ile Gly Ile Ser Ile Tyr Thr Cys			
20	25	30	
Glu His Asn Asn Pro Val Leu Ile Glu Phe Tyr Val Ser Lys Lys Gly			
35	40	45	
Ser Ile Cys Tyr Tyr Phe Tyr Ser Met Asn Asn Asp Thr Asn Lys Trp			
50	55	60	
Asn Asn His Lys Ile Lys Tyr Asp Lys Arg Phe Asn Glu His Thr Asp			
65	70	75	80
Met Asn Gly Ile His Tyr Tyr Tyr Ile Asp Gly Ser Leu Leu Ala Ser			
85	90	95	
Gly Glu Val Thr Ser Asn Phe Arg Tyr Ile Ser Lys Glu Tyr Glu Tyr			
100	105	110	
Glu His Thr Glu Leu Ala Lys Glu His Cys Lys Lys Glu Lys Cys Val			
115	120	125	
Asn Val Asp Asn Ile Glu Asp Asn Asn Leu Lys Ile Tyr Ala Lys Gln			
130	135	140	
Phe Lys Ser Val Val Thr Thr Pro Ala Asp Val Ala Gly Val Ser Asp			
145	150	155	160
Gly Phe Phe Ile Arg Gly Gln Asn Leu Gly Ala Val Gly Ser Val Asn			
165	170	175	
Glu Gln Pro Asn Thr Val Gly Met Ser Leu Glu Gln Phe Ile Lys Asn			
180	185	190	
Glu Leu Tyr Ser Phe Ser Asn Glu Ile Tyr His Thr Ile Ser Ser Gln			
195	200	205	
Ile Ser Asn Ser Phe Leu Ile Met Met Ser Asp Ala Ile Val Lys His			
210	215	220	
Asp Asn Tyr Ile Leu Lys Lys Glu Gly Glu Gly Cys Glu Gln Ile Tyr			
225	230	235	240
Asn Tyr Glu Glu Phe Ile Glu Lys Leu Arg Gly Ala Arg Ser Glu Gly			
245	250	255	
Asn Asn Met Phe Gln Glu Ala Leu Ile Arg Phe Arg Asn Ala Ser Ser			
260	265	270	
Glu Glu Met Val Asn Ala Ala Ser Tyr Leu Ser Ala Ala Leu Phe Arg			
275	280	285	
Tyr Lys Glu Phe Asp Asp Glu Leu Phe Lys Lys Ala Asn Asp Asn Phe			
290	295	300	
Gly Arg Asp Asp Gly Tyr Asp Phe Asp Tyr Ile Asn Thr Lys Lys Glu			
305	310	315	320
Leu Val Ile Leu Ala Ser Val Leu Asp Gly Leu Asp Leu Ile Met Glu			
325	330	335	
Arg Leu Ile Glu Asn Phe Ser Asp Val Asn Asn Thr Asp Asp Ile Lys			
340	345	350	
Lys Ala Phe Asp Glu Cys Lys Ser Asn Ala Ile Ile Leu Lys Lys Lys			
355	360	365	
Ile Leu Asp Asn Asp Glu Asp Tyr Lys Ile Asn Phe Arg Glu Met Val			
370	375	380	
Asn Glu Val Thr Cys Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu			
385	390	395	400
Ile Ile Ser Asp Cys Glu Lys Lys Gly Ile Lys Ile Asn Arg Asp Val			
405	410	415	
Ile Ser Ser Tyr Lys Leu Leu Leu Ser Thr Ile Thr Tyr Ile Val Gly			
420	425	430	
Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala Thr Ser Asn Gly			

	435		440		445
Thr	Glu Ser Gly Gly Ala Gly Ser Gly Thr Gly Thr Ser Val Ser Ala				
	450		455		460
Thr	Ser Thr Leu Thr Gly Asn Gly Gly Thr Glu Ser Gly Gly Thr Ala				
465		470		475	480
Gly Thr Thr Thr Ser Ser Gly Thr Trp Phe Gly Lys					
	485		490		

<210> 22
 <211> 138
 <212> PRT
 <213> Babesia microti

	<400> 22
Ser Leu Gly Gln Pro Ala Ser Leu Gly Gln Pro Ala Ser Leu Gly Gln	
1	5 10 15
Pro Ala Ser Leu Gly Gln Pro Ala Ser Leu Gly Gln Pro Ala Ser Leu	
	20 25 30
Gly Gln Pro Val Pro Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala	
	35 40 45
Ser Leu Gly Pro Pro Ala Ser Leu Gly Gln Pro Val Pro Leu Gly Pro	
50	55 60
Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu	
65	70 75 80
Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala	
	85 90 95
Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro	
	100 105 110
Thr Val Pro Leu Gly Pro Pro Ala Ser Arg Ser Val Ser Pro Ala Lys	
	115 120 125
Thr Ala Pro Leu Ile Lys Lys Ser Val Ile	
130	135

<210> 23
 <211> 303
 <212> PRT
 <213> Babesia microti

	<400> 23
Leu Trp Phe Ile Lys Met Val Ser Phe Lys Ser Ile Leu Val Pro Tyr	
1	5 10 15
Ile Thr Leu Phe Leu Met Ser Gly Ala Val Phe Ala Gly Asp Thr Asp	
	20 25 30
Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly	
	35 40 45
Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu	
50	55 60
Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro	
65	70 75 80
Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly	
	85 90 95
Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu	
	100 105 110
Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro	

	115		120		125
Ser	Glu Arg Phe Gly Tyr Gln	Leu Leu Trp Tyr	Ser Arg Arg Ile Val		
	130	135	140		
Ile	Phe Asn Glu Ile Tyr Leu	Ser His Ile Tyr	Glu His Ser Val Met		
145		150	155		160
Ile	Leu Glu Arg Asp Arg Val	Asn Asp Gly His Lys	Asp Tyr Ile Glu		
	165	170	175		
Glu	Lys Thr Lys Glu Lys Asn	Lys Leu Lys Lys Glu	Leu Glu Lys Cys		
	180	185	190		
Phe	Pro Glu Gln Tyr Ser Leu	Met Lys Lys Glu Glu	Leu Ala Arg Ile		
	195	200	205		
Ile	Asp Asn Ala Ser Thr Ile	Ser Ser Lys Tyr Lys	Leu Leu Val Asp		
	210	215	220		
Glu	Ile Ser Asn Lys Ala Tyr	Gly Thr Leu Glu Gly	Pro Ala Ala Asp		
225		230	235		240
Asp	Phe Asp His Phe Arg Asn	Ile Trp Lys Ser Ile	Val Pro Lys Asn		
	245	250	255		
Met	Phe Leu Tyr Cys Asp Leu	Leu Leu Lys His Leu	Ile Arg Lys Phe		
	260	265	270		
Tyr	Cys Asp Asn Thr Ile Asn	Asp Ile Lys Lys Asn	Phe Asp Asp Ile		
	275	280	285		
Glu	Lys Leu Gly Cys Phe Gln	Ala Arg Ser Phe Leu	Pro Val Asn		
	290	295	300		

<210> 24

<211> 592

<212> PRT

<213> Babesia microti

<400> 24

Met	Met Lys Phe Asn Ile Asp	Lys Ile Ile Leu Ile Asn	Leu Ile Val
1		10	15
Leu	Leu Asn Arg Asn Val Val	Tyr Cys Val Asp Thr	Asn Asn Ser Ser
	20	25	30
Leu	Ile Glu Ser Gln Pro Val	Thr Thr Asn Ile Asp Thr	Asp Asn Thr
	35	40	45
Ile	Thr Thr Asn Lys Tyr Thr	Gly Thr Ile Ile Asn	Ala Asn Ile Val
	50	55	60
Glu	Tyr Arg Glu Phe Glu Asp	Glu Pro Leu Thr Ile	Gly Phe Arg Tyr
65		70	75
Thr	Ile Asp Lys Ser Gln Gln	Asn Lys Leu Ser His	Pro Asn Lys Ile
	85	90	95
Asp	Lys Ile Lys Phe Ser Asp	Tyr Ile Glu Phe Asp	Asp Asn Ala
	100	105	110
Lys	Leu Pro Thr Asp Asn Val	Ile Cys Ile Ser Ile Tyr	Thr Cys Lys
	115	120	125
His	Asn Asn Pro Val Leu Ile	Arg Phe Ser Cys Ser	Ile Glu Lys Tyr
	130	135	140
Tyr	Tyr His Tyr Phe Tyr Ser	Met Asn Asn Asp Thr	Asn Lys Trp Asn
145		150	155
Asn	His Lys Leu Lys Tyr Asp	Lys Thr Tyr Asn Glu	Tyr Thr Asp Asn
	165	170	175
Asn	Gly Val Asn Tyr Tyr Lys	Ile Tyr Tyr Ser Asp	Lys Gln Asn Ser
	180	185	190


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Pro Thr Asn Gly Asn Glu Tyr Glu Asp Val Ala Leu Ala Arg Ile His
    195                                200                                205
Cys Asn Glu Glu Arg Cys Ala Asn Val Lys Val Asp Lys Ile Lys Tyr
    210                                215                                220
Lys Asn Leu Glu Ile Tyr Val Lys Gln Leu Gly Thr Ile Ile Asn Ala
    225                                230                                235                                240
Asn Ile Val Glu Tyr Leu Val Phe Glu Asp Glu Pro Leu Thr Ile Gly
    245                                250                                255
Phe Arg Tyr Thr Ile Asp Lys Ser Gln Gln Asn Glu Leu Ser His Pro
    260                                265                                270
Asn Lys Ile Tyr Lys Ile Lys Phe Ser Asp Tyr Ile Ile Glu Phe Asp
    275                                280                                285
Asp Asp Ala Lys Leu Thr Thr Ile Gly Thr Val Glu Asp Ile Thr Ile
    290                                295                                300
Tyr Thr Cys Lys His Asn Asn Pro Val Leu Ile Arg Phe Ser Cys Ser
    305                                310                                315                                320
Ile Glu Lys Tyr Tyr Tyr Tyr Tyr Phe Tyr Ser Met Asn Asn Asn Thr
    325                                330                                335
Asn Lys Trp Asn Asn His Asn Leu Lys Tyr Asp Asn Arg Phe Lys Glu
    340                                345                                350
His Ser Asp Lys Asn Gly Ile Asn Tyr Tyr Glu Ile Ser Ala Phe Lys
    355                                360                                365
Trp Ser Phe Ser Cys Phe Phe Val Asn Lys Tyr Glu His Lys Glu Leu
    370                                375                                380
Ala Arg Ile His Cys Asn Glu Glu Arg Cys Ala Asn Val Lys Val Asp
    385                                390                                395                                400
Lys Ile Lys Tyr Lys Asn Leu Glu Ile Tyr Val Lys Gln Leu Gly Thr
    405                                410                                415
Ile Ile Asn Ala Asn Ile Val Glu Tyr Leu Val Phe Glu Asp Glu Pro
    420                                425                                430
Leu Thr Ile Gly Phe Arg Tyr Thr Ile Asp Lys Ser Gln Gln Asn Glu
    435                                440                                445
Leu Ser His Pro Asn Lys Ile Tyr Lys Ile Lys Phe Ser Asp Tyr Ile
    450                                455                                460
Ile Glu Phe Asp Asp Asp Ala Lys Leu Thr Thr Ile Gly Thr Val Glu
    465                                470                                475                                480
Asp Ile Thr Ile Tyr Thr Cys Lys His Asn Asn Pro Val Leu Ile Arg
    485                                490                                495
Phe Ser Cys Ser Ile Glu Lys Tyr Tyr Tyr Tyr Phe Tyr Ser Met
    500                                505                                510
Asn Asn Asn Thr Asn Lys Trp Asn Asn His Asn Leu Lys Tyr Asp Asn
    515                                520                                525
Arg Phe Lys Glu His Ser Asp Lys Asn Gly Ile Asn Tyr Tyr Glu Ile
    530                                535                                540
Ser Ala Phe Lys Trp Ser Phe Ser Cys Phe Phe Val Asn Lys Tyr Glu
    545                                550                                555                                560
His Lys Glu Leu Ala Arg Ile His Cys Asn Glu Glu Lys Cys Val Asn
    565                                570                                575
Val Lys Val Asp Asn Ile Gly Asn Lys Asn Leu Glu Ile Tyr Val Lys
    580                                585                                590

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<210> 25

<211> 463

<212> PRT

<213> Babesia microti

<400> 25

Ile	Ile	Met	Lys	Ile	Asn	Ile	Asp	Asn	Ile	Ile	Leu	Ile	Asn	Leu	Ile
1				5					10					15	
Ile	Leu	Leu	Asn	Arg	Asn	Val	Val	Tyr	Cys	Val	Asp	Lys	Asn	Asp	Val
			20					25					30		
Ser	Leu	Trp	Lys	Ser	Lys	Pro	Ile	Thr	Thr	Val	Ser	Thr	Thr	Asn	Asp
		35					40						45		
Thr	Ile	Thr	Asn	Lys	Tyr	Thr	Ser	Thr	Val	Ile	Asn	Ala	Asn	Phe	Ala
	50					55					60				
Ser	Tyr	Arg	Glu	Phe	Glu	Asp	Arg	Glu	Pro	Leu	Thr	Ile	Gly	Phe	Glu
65					70					75					80
Tyr	Met	Ile	Asp	Lys	Ser	Gln	Gln	Asp	Lys	Leu	Ser	His	Pro	Asn	Lys
				85					90					95	
Ile	Asp	Lys	Ile	Lys	Ile	Ser	Asp	Tyr	Ile	Ile	Glu	Phe	Asp	Asp	Asn
			100					105					110		
Ala	Lys	Leu	Pro	Thr	Gly	Ser	Val	Asn	Asp	Ile	Ser	Ile	Ile	Thr	Cys
	115						120						125		
Lys	His	Asn	Asn	Pro	Val	Leu	Ile	Arg	Phe	Ser	Cys	Leu	Ile	Glu	Gly
	130					135					140				
Ser	Ile	Cys	Tyr	Tyr	Phe	Tyr	Leu	Leu	Asn	Asn	Asp	Thr	Asn	Lys	Trp
145					150					155					160
Asn	Asn	His	Lys	Leu	Lys	Tyr	Asp	Lys	Thr	Tyr	Asn	Glu	His	Thr	Asp
			165						170					175	
Asn	Asn	Gly	Ile	Asn	Tyr	Tyr	Lys	Ile	Asp	Tyr	Ser	Glu	Ser	Thr	Glu
		180						185					190		
Pro	Thr	Thr	Glu	Ser	Thr	Thr	Cys	Phe	Cys	Phe	Arg	Lys	Lys	Asn	His
		195					200					205			
Lys	Ser	Glu	Arg	Lys	Glu	Leu	Glu	Asn	Tyr	Lys	Tyr	Glu	Gly	Thr	Glu
	210					215						220			
Leu	Ala	Arg	Ile	His	Cys	Asn	Lys	Gly	Lys	Cys	Val	Lys	Leu	Gly	Asp
225					230					235					240
Ile	Lys	Ile	Lys	Asp	Lys	Asn	Leu	Glu	Ile	Tyr	Val	Lys	Gln	Leu	Met
			245						250					255	
Ser	Val	Asn	Thr	Pro	Val	Asn	Phe	Asp	Asn	Pro	Thr	Ser	Ile	Asn	Leu
		260						265					270		
Pro	Thr	Val	Ser	Thr	Thr	Asn	Asp	Thr	Ile	Thr	Asn	Lys	Tyr	Thr	Gly
	275						280					285			
Thr	Ile	Ile	Asn	Ala	Asn	Ile	Val	Glu	Tyr	Cys	Glu	Phe	Glu	Asp	Glu
	290					295					300				
Pro	Leu	Thr	Ile	Gly	Phe	Arg	Tyr	Thr	Ile	Asp	Lys	Ser	Gln	Gln	Asn
305					310					315					320
Lys	Leu	Ser	His	Pro	Asn	Lys	Ile	Asp	Lys	Ile	Lys	Phe	Phe	Asp	Tyr
			325						330					335	
Ile	Ile	Glu	Phe	Asp	Asp	Asp	Val	Lys	Leu	Pro	Thr	Ile	Gly	Thr	Val
		340						345					350		
Asn	Ile	Ile	Tyr	Ile	Tyr	Thr	Cys	Glu	His	Asn	Asn	Pro	Val	Leu	Val
	355						360					365			
Glu	Phe	Ile	Val	Ser	Ile	Glu	Glu	Ser	Tyr	Tyr	Phe	Tyr	Phe	Tyr	Ser
	370					375					380				
Met	Asn	Asn	Asn	Thr	Asn	Lys	Trp	Asn	Asn	His	Lys	Leu	Lys	Tyr	Asp
385					390					395					400
Lys	Arg	Phe	Lys	Lys	Tyr	Thr	Lys	Asn	Gly	Ile	Asn	Cys	Tyr	Glu	Tyr

				405					410				415			
Val	Leu	Arg	Lys	Cys	Ser	Ser	Tyr	Thr	Arg	Lys	Asn	Glu	Tyr	Glu	His	
			420					425					430			
Lys	Glu	Leu	Ala	Arg	Ile	His	Cys	Asn	Glu	Glu	Lys	Cys	Val	Asn	Val	
		435					440					445				
Lys	Val	Asp	Asn	Ile	Glu	Lys	Lys	Asn	Leu	Glu	Ile	Tyr	Val	Lys		
	450					455					460					

<210> 26

<211> 297

<212> PRT

<213> Babesia microti

<400> 26

Arg	Ala	Ala	Arg	Ala	Asp	Tyr	Tyr	Lys	Tyr	Leu	Val	Asp	Glu	Tyr	Ser	
1				5					10					15		
Ser	Pro	Arg	Glu	Glu	Arg	Glu	Leu	Ala	Arg	Val	His	Cys	Asn	Glu	Glu	
			20					25					30			
Lys	Cys	Val	Lys	Leu	Asp	Gly	Ile	Lys	Phe	Lys	Asp	Lys	Asn	Leu	Glu	
		35				40						45				
Ile	Tyr	Val	Lys	Gln	Leu	Met	Ser	Val	Asn	Thr	Pro	Val	Val	Phe	Asp	
	50					55					60					
Asn	Asn	Thr	Leu	Ile	Asn	Pro	Thr	Ser	Ser	Ser	Gly	Ala	Thr	Asp	Asp	
65					70					75					80	
Ile	Thr	Tyr	Glu	Leu	Ser	Val	Glu	Ser	Gln	Pro	Val	Pro	Thr	Asn	Ile	
				85					90					95		
Asp	Thr	Gly	Asn	Asn	Ile	Thr	Thr	Asn	Thr	Ser	Asn	Asn	Asn	Leu	Ile	
			100					105						110		
Lys	Ala	Lys	Phe	Leu	Tyr	Asn	Phe	Asn	Leu	Pro	Gly	Lys	Pro	Ser	Thr	
		115					120					125				
Gly	Leu	Phe	Glu	Tyr	Thr	Ile	Asp	Lys	Ser	Glu	Gln	Asn	Lys	Leu	Ser	
	130					135					140					
His	Pro	Asn	Lys	Ile	Asp	Lys	Ile	Lys	Phe	Ser	Asp	Tyr	Ile	Ile	Glu	
145					150					155					160	
Phe	Asp	Asp	Asp	Ala	Lys	Leu	Pro	Thr	Ile	Gly	Thr	Val	Asn	Ile	Ile	
				165					170					175		
Ser	Ile	Ile	Thr	Cys	Lys	His	Asn	Asn	Pro	Val	Leu	Val	Glu	Phe	Ile	
			180					185					190			
Val	Ser	Thr	Glu	Ile	Tyr	Cys	Tyr	Asn	Tyr	Phe	Tyr	Ser	Met	Asn		
	195						200					205				
Asn	Asn	Thr	Asn	Lys	Trp	Asn	Asn	His	Lys	Leu	Lys	Tyr	Asp	Lys	Arg	
	210					215					220					
Tyr	Lys	Glu	Glu	Tyr	Thr	Asp	Asp	Asn	Gly	Ile	Asn	Tyr	Tyr	Lys	Leu	
225					230					235					240	
Asn	Asp	Ser	Glu	Pro	Thr	Glu	Ser	Thr	Glu	Ser	Thr	Thr	Cys	Phe	Cys	
			245						250					255		
Phe	Arg	Lys	Lys	Asn	His	Lys	Tyr	Glu	Asn	Glu	Arg	Thr	Ala	Leu	Ala	
		260						265					270			
Lys	Glu	His	Cys	Asn	Glu	Glu	Arg	Cys	Val	Lys	Val	Asp	Asn	Ile	Lys	
		275					280					285				
Asp	Asn	Asn	Leu	Glu	Ile	Tyr	Leu	Lys								
	290					295										

<210> 27

<211> 121
 <212> PRT
 <213> Babesia microti

<400> 27
 Leu Trp Phe Ile Lys Met Val Ser Phe Lys Ser Ile Leu Val Pro Tyr
 1 5 10 15
 Ile Thr Leu Phe Leu Met Ser Gly Ala Val Phe Ala Ser Asp Thr Asp
 20 25 30
 Pro Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly
 35 40 45
 Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
 50 55 60
 Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Gly Pro
 65 70 75 80
 Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly
 85 90 95
 Trp Ser Ser Glu Arg Phe Gly Tyr Gln Leu Leu Pro Tyr Ser Arg Arg
 100 105 110
 Ile Val Thr Phe Asn Glu Val Cys Leu
 115 120

<210> 28
 <211> 267
 <212> PRT
 <213> Babesia microti

<400> 28
 Leu Trp Phe Ile Lys Met Val Ser Phe Lys Ser Ile Leu Val Pro Tyr
 1 5 10 15
 Ile Thr Leu Phe Leu Met Ser Gly Ala Val Phe Ala Ser Asp Thr Asp
 20 25 30
 Pro Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly
 35 40 45
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu
 50 55 60
 Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro
 65 70 75 80
 Ser Glu Ala Gly Trp Ser Ser Glu Arg Phe Gly Tyr Gln Leu Leu Pro
 85 90 95
 Tyr Ser Arg Arg Ile Val Thr Phe Asn Glu Val Cys Leu Ser Tyr Ile
 100 105 110
 Tyr Lys His Ser Val Met Ile Leu Glu Arg Asp Arg Val Asn Asp Gly
 115 120 125
 His Lys Asp Tyr Ile Glu Glu Lys Thr Lys Glu Lys Asn Lys Leu Lys
 130 135 140
 Lys Glu Leu Glu Lys Cys Phe Pro Glu Gln Tyr Ser Leu Met Lys Lys
 145 150 155 160
 Glu Glu Leu Ala Arg Ile Phe Asp Asn Ala Ser Thr Ile Ser Ser Lys
 165 170 175
 Tyr Lys Leu Leu Val Asp Glu Ile Ser Asn Lys Ala Tyr Gly Thr Leu
 180 185 190
 Glu Gly Pro Ala Ala Asp Asn Phe Asp His Phe Arg Asn Ile Trp Lys
 195 200 205

Ser Ile Val Leu Lys Asp Met Phe Ile Tyr Cys Asp Leu Leu Leu Gln
 210 215 220
 His Leu Ile Tyr Lys Phe Tyr Tyr Asp Asn Thr Ile Asn Asp Ile Lys
 225 230 235 240
 Lys Asn Phe Asp Glu Ser Lys Ser Lys Ala Leu Val Leu Arg Asp Lys
 245 250 255
 Ile Thr Lys Lys Asp Val Tyr Val Asn Asp His
 260 265

<210> 29
 <211> 16
 <212> PRT
 <213> Babesia microti

<400> 29
 Ala Trp Thr Phe Ser Val Leu Glu Leu Gln Glu Phe Ser Tyr Thr Val
 1 5 10 15

<210> 30
 <211> 465
 <212> PRT
 <213> Babesia microti

<400> 30
 Met Leu Thr Phe Gly Asn Ile Arg Phe His Asn Ile Asn Leu Pro Pro
 1 5 10 15
 Phe Ser Leu Gly Ile Ile His Ser Ile Thr Val Glu Lys Ala Ile Asn
 20 25 30
 Ser Glu Asp Phe Asp Gly Ile Gln Thr Leu Leu Gln Val Ser Ile Ile
 35 40 45
 Ala Ser Tyr Gly Pro Ser Gly Asp Tyr Ser Ser Phe Val Phe Thr Pro
 50 55 60
 Val Val Thr Ala Asp Thr Asn Val Phe Tyr Lys Leu Glu Thr Asp Phe
 65 70 75 80
 Lys Leu Asp Val Asp Val Ile Thr Lys Thr Ser Leu Glu Leu Pro Thr
 85 90 95
 Ser Val Pro Gly Phe His Tyr Thr Glu Thr Ile Tyr Gln Gly Thr Glu
 100 105 110
 Leu Ser Lys Phe Ser Lys Pro Gln Cys Lys Leu Asn Asp Pro Pro Ile
 115 120 125
 Thr Thr Gly Ser Gly Leu Gln Ile Ile His Asp Gly Leu Asn Asn Ser
 130 135 140
 Thr Ile Ile Thr Asn Lys Glu Val Asn Val Asp Gly Thr Asp Leu Val
 145 150 155 160
 Phe Phe Glu Leu Leu Pro Pro Ser Asp Gly Ile Pro Thr Leu Arg Ser
 165 170 175
 Lys Leu Phe Pro Val Leu Lys Ser Ile Pro Met Ile Ser Thr Gly Val
 180 185 190
 Asn Glu Leu Leu Leu Glu Val Leu Glu Asn Pro Ser Phe Pro Ser Ala
 195 200 205
 Ile Ser Asn Tyr Thr Gly Leu Thr Gly Arg Leu Asn Lys Leu Leu Thr
 210 215 220
 Val Leu Asp Gly Ile Val Asp Ser Ala Ile Ser Val Lys Thr Thr Glu
 225 230 235 240

<div><210> 31</div> <div><211> 128</div> <div><212> PRT</div> <div><213> Babesia microti</div>																
<div><400> 31</div> <div>Leu Trp Phe Ile Lys Met Val Ser Phe Lys Ser Ile Leu Val Pro Tyr</div> <div>1 5 10 15</div> <div>Ile Thr Leu Phe Leu Met Ser Gly Ala Val Phe Ala Ser Asp Thr Asp</div> <div>20 25 30</div> <div>Pro Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Val</div> <div>35 40 45</div> <div>Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly</div> <div>50 55 60</div> <div>Thr Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro</div> <div>65 70 75 80</div> <div>Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly</div> <div>85 90 95</div> <div>Trp Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Ser Ser Glu</div> <div>100 105 110</div> <div>Arg Phe Gly Tyr Gln Leu Leu Pro Tyr Ser Arg Arg Ile Val Ile Phe</div> <div>115 120 125</div>																

<210> 32
 <211> 245
 <212> PRT
 <213> Babesia microti

<400> 32
 Gln Glu Cys Cys Leu Val Val Lys Asp Lys Val Ile Arg His Ala Ala
 1 5 10 15
 Phe Ala Ala Thr Ile Ile Ile Arg Arg Arg Arg Val Ser Phe Ile Ile
 20 25 30
 Leu Gly Leu Ile Ile Ala Thr Met Thr Pro Phe Phe Thr Lys Val Phe
 35 40 45
 Phe Phe Gln Arg Cys Leu Ser Ile Met Arg Phe Tyr Ser Ser Leu Pro
 50 55 60
 Thr Phe Ile Leu Ile Glu Ile Ala Met Leu Phe Phe Met Ser Val Thr
 65 70 75 80
 Cys Phe Leu Arg Cys Leu Ser Ile Ile Arg Phe Tyr Ser Ser Ile Ser
 85 90 95
 Thr Phe Ile Leu Ile Asp Phe Val Met Pro Phe Phe Thr Leu Phe Thr
 100 105 110
 Tyr Phe Leu Arg Cys Leu Ser Ile Met Arg Phe Ser Phe Ser Leu Leu
 115 120 125
 Thr Phe Ile Arg Ile Asp Phe Val Met Pro Phe Phe Met Ser Val Thr
 130 135 140
 Cys Phe Leu Arg Cys Leu Ser Ile Ile Arg Phe Tyr Ser Ser Ile Ser
 145 150 155 160
 Thr Phe Ile Leu Ile Asp Phe Val Met Pro Phe Phe Thr Leu Phe Thr
 165 170 175
 Tyr Phe Leu Arg Cys Leu Ser Ile Ile Arg Phe Tyr Ser Ser Ile Ser
 180 185 190
 Thr Phe Ile Leu Ile Asp Phe Val Met Pro Phe Phe Thr Leu Phe Thr
 195 200 205
 Tyr Phe Leu Arg Cys Leu Ser Ile Met Arg Phe Ser Phe Ser Leu Leu
 210 215 220
 Thr Phe Ile Arg Ile Gly Phe Ala Met Pro Phe Phe Thr Leu Phe Ile
 225 230 235 240
 Tyr Phe Leu Cys Arg
 245

<210> 33
 <211> 293
 <212> PRT
 <213> Babesia microti

<400> 33
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 Ser Ala Gly Gly Ser Gly Gly Asn Gly Gly Asn Gly Gly Gly His Gln
 20 25 30
 Glu Gln Asn Asn Ala Asn Asp Ser Ser Asn Pro Thr Gly Ala Gly Gly
 35 40 45
 Gln Pro Asn Asn Glu Ser Lys Lys Lys Ala Val Lys Leu Asp Leu Asp
 50 55 60
 Leu Met Lys Glu Thr Lys Asn Val Cys Thr Thr Val Asn Thr Lys Leu

65					70					75					80
Val	Gly	Lys	Ala	Lys	Ser	Lys	Leu	Asn	Lys	Leu	Glu	Gly	Glu	Ser	His
				85					90					95	
Lys	Glu	Tyr	Val	Ala	Glu	Lys	Thr	Lys	Glu	Ile	Asp	Glu	Lys	Asn	Lys
			100					105					110		
Lys	Phe	Asn	Glu	Asn	Leu	Val	Lys	Ile	Glu	Lys	Lys	Lys	Lys	Ile	Lys
		115					120					125			
Val	Pro	Ala	Asp	Thr	Gly	Ala	Glu	Val	Asp	Ala	Val	Asp	Asp	Gly	Val
	130				135						140				
Ala	Gly	Ala	Leu	Ser	Asp	Leu	Ser	Ser	Asp	Ile	Ser	Ala	Ile	Lys	Thr
145				150					155					160	
Leu	Thr	Asp	Asp	Val	Ser	Glu	Lys	Val	Ser	Glu	Asn	Leu	Lys	Asp	Asp
			165					170					175		
Glu	Ala	Ser	Ala	Thr	Glu	His	Thr	Asp	Ile	Lys	Glu	Lys	Ala	Thr	Leu
			180				185						190		
Leu	Gln	Glu	Ser	Cys	Asn	Gly	Ile	Gly	Thr	Ile	Leu	Asp	Lys	Leu	Ala
	195				200							205			
Glu	Tyr	Leu	Asn	Asn	Asp	Thr	Thr	Gln	Asn	Ile	Lys	Lys	Glu	Phe	Asp
210					215						220				
Glu	Arg	Lys	Lys	Asn	Leu	Thr	Ser	Leu	Lys	Thr	Lys	Val	Glu	Asn	Lys
225				230					235					240	
Asp	Glu	Asp	Tyr	Val	Asp	Val	Thr	Met	Thr	Ser	Lys	Thr	Asp	Leu	Ile
			245					250					255		
Ile	His	Cys	Leu	Thr	Cys	Thr	Asn	Asp	Ala	His	Gly	Leu	Phe	Asp	Phe
		260					265						270		
Glu	Ser	Lys	Ser	Leu	Ile	Lys	Gln	Thr	Phe	Lys	Leu	Arg	Ser	Lys	Asp
	275					280						285			
Glu	Gly	Glu	Leu	Cys											
290															

<210> 34

<211> 431

<212> PRT

<213> Babesia microti

<400> 34

Gly	Pro	Lys	Met	Lys	Val	Asn	Ser	Ala	Asn	Leu	Asp	Phe	Arg	Trp	Ala
1				5					10					15	
Met	Tyr	Met	Leu	Asn	Ser	Lys	Ile	His	Leu	Ile	Glu	Ser	Ser	Leu	Ile
		20						25					30		
Asp	Asn	Phe	Thr	Leu	Asp	Asn	Pro	Ser	Ala	Tyr	Glu	Ile	Leu	Arg	Val
	35					40					45				
Ser	Tyr	Asn	Ser	Asn	Glu	Phe	Gln	Val	Gln	Ser	Pro	Gln	Asn	Ile	Asn
	50				55					60					
Asn	Glu	Met	Glu	Ser	Ser	Thr	Pro	Glu	Ser	Asn	Ile	Ile	Trp	Val	Val
65				70					75					80	
His	Ser	Asp	Val	Ile	Met	Lys	Arg	Phe	Asn	Cys	Lys	Asn	Arg	Lys	Ser
			85					90					95		
Leu	Ser	Thr	His	Ser	Leu	Thr	Glu	Asn	Asp	Ile	Leu	Lys	Phe	Gly	Arg
		100					105						110		
Ile	Glu	Leu	Ser	Val	Lys	Cys	Ile	Ile	Met	Gly	Ala	Gly	Ile	Thr	Ala
	115					120						125			
Ser	Asp	Leu	Asn	Leu	Lys	Gly	Leu	Gly	Phe	Ile	Ser	Pro	Asp	Lys	Gln
130						135					140				


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Ser Thr Asn Val Cys Asn Tyr Phe Glu Asp Met His Glu Ser Tyr His
145                               150           155           160
Ile Leu Asp Thr Gln Arg Ala Ser Asp Cys Val Ser Asp Asp Gly Ala
                               165           170           175
Asp Ile Asp Ile Ser Asn Phe Asp Met Val Gln Asp Gly Asn Ile Asn
                               180           185           190
Ser Val Asp Ala Asp Ser Glu Thr Cys Met Ala Asn Ser Gly Val Thr
                               195           200           205
Val Asn Asn Thr Glu Asn Val Ser Asn Ser Glu Asn Phe Gly Lys Leu
                               210           215           220
Lys Ser Leu Val Ser Thr Thr Thr Pro Leu Cys Arg Ile Cys Leu Cys
225                               230           235           240
Gly Glu Ser Asp Pro Gly Pro Leu Val Thr Pro Cys Asn Cys Lys Gly
                               245           250           255
Ser Leu Asn Tyr Val His Leu Glu Cys Leu Arg Thr Trp Ile Lys Gly
                               260           265           270
Arg Leu Ser Ile Val Lys Asp Asp Asp Ala Ser Phe Phe Trp Lys Glu
                               275           280           285
Leu Ser Cys Glu Leu Cys Gly Lys Pro Tyr Pro Ser Val Leu Gln Val
                               290           295           300
Asp Asp Thr Glu Thr Asn Leu Met Asp Ile Lys Lys Pro Asp Ala Pro
305                               310           315           320
Tyr Val Val Leu Glu Met Arg Ser Asn Ser Gly Asp Gly Cys Phe Val
                               325           330           335
Val Ser Val Ala Lys Asn Lys Ala Ile Ile Gly Arg Gly His Glu Ser
                               340           345           350
Asp Val Arg Leu Ser Asp Ile Ser Val Ser Arg Met His Ala Ser Leu
                               355           360           365
Glu Leu Asp Gly Gly Lys Val Val Ile His Asp Gln Gln Ser Lys Phe
370                               375           380
Gly Thr Leu Val Arg Ala Lys Ala Pro Phe Ser Met Pro Ile Lys Gly
385                               390           395           400
Pro Ile Cys Leu Gln Val Ser Ile Phe Phe Leu Asn Leu Lys Ile Ser
                               405           410           415
Thr His Ser Leu Thr Met Glu Arg Gly Met Glu His Val Leu Leu
                               420           425           430

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<210> 35

<211> 6

<212> PRT

<213> Babesia microti

<220>

<221> VARIANT

<222> (1)...(1)

<223> Xaa = Glutamic Acid or Glycine

<221> VARIANT

<222> (2)...(2)

<223> Xaa = Alanine or Threonine

<221> VARIANT

<222> (3)...(3)

<223> Xaa = Glycine or Valine

<221> VARIANT
 <222> (4)...(4)
 <223> Xaa = Tryptophan or Glycine

<221> VARIANT
 <222> (5)...(5)
 <223> Xaa = Proline or Serine

<400> 35

Xaa Xaa Xaa Xaa Xaa Ser
 1 5

<210> 36
 <211> 32
 <212> PRT
 <213> Babesia microti

<220>
 <221> VARIANT
 <222> (6)...(6)
 <223> Xaa = Methionine or Isoleucine

<221> VARIANT
 <222> (9)...(9)
 <223> Xaa = Tyrosine or Serine

<221> VARIANT
 <222> (10)...(10)
 <223> Xaa = Serine or Phenylalanine

<221> VARIANT
 <222> (12)...(12)
 <223> Xaa = Leucine or Isoleucine

<221> VARIANT
 <222> (13)...(13)
 <223> Xaa = Proline, Serine or Leucine

<221> VARIANT
 <222> (17)...(17)
 <223> Xaa = Leucine or Arginine

<221> VARIANT
 <222> (19)...(19)
 <223> Xaa = Glutamic Acid, Aspartic Acid or Glycine

<221> VARIANT
 <222> (20)...(20)
 <223> Xaa = Isoleucine or Phenylalanine

<221> VARIANT
 <222> (21)...(21)
 <223> Xaa = Alanine or Valine

<221> VARIANT
 <222> (23)...(23)
 <223> Xaa = Leucine or Proline

<221> VARIANT
 <222> (26)...(26)
 <223> Xaa = Methionine or Threonine

<221> VARIANT
 <222> (27)...(27)
 <223> Xaa = Serine or Leucine

<221> VARIANT
 <222> (28)...(28)
 <223> Xaa = Valine or Phenylalanine

<221> VARIANT
 <222> (29)...(29)
 <223> Xaa = Threonine or Isoleucine

<221> VARIANT
 <222> (30)...(30)
 <223> Xaa = Cysteine or Tyrosine

<400> 36
 Arg Cys Leu Ser Ile Xaa Arg Phe Xaa Xaa Ser Xaa Xaa Thr Phe Ile
 1 5 10 15
 Xaa Ile Xaa Xaa Xaa Met Xaa Phe Phe Xaa Xaa Xaa Xaa Xaa Phe Leu
 20 25 30

<210> 37
 <211> 1820
 <212> DNA
 <213> Babesia microti

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 taattttaaag aacagacatc tggccattca tgctaagagg tctcttcatt gttgagtggg 180
 aacagccttg tatacgggct tacaacacaa tggaaaaaca ccttgtagaa gagatcatgc 240
 ttcactcagt gctagatggt gatgccagt atttgcttgg ggtagtaagc cagtactaga 300
 atacaggatg cacttggtact ggcaaacaga atacacctgt tgcctgaata gaaactcaca 360
 gagaccgat gctgtctggt accaacaagg ttctgcttct gggaagaatt tacagatatt 420
 atgttgggaa aagagacacc ctgtatgtgt agaaacaaag aagcacagat cttagatgaa 480
 ttaatataag aatgatactt ctctagaaac aaatgtagtt accaactata ttccagaacc 540
 caatgcggat tcagaatctg tacatgttga aatccaggaa catgataaca tcaatccaca 600
 agacgcttgc gatagtgagc cgctcgaaca aatggattct gataccaggg tgttgcccga 660
 aagtttggat gagggggtac cacaccaatt ctctagatta gggcaccact cagacatggc 720
 atctgatata aatgatgaag aaccatcatt taaaatcggc gagaatgaca taattcaacc 780
 accctgggaa gatacagctc cataccattc aatagatgat gaagagcttg acaacttaat 840
 gagactaacg gcgcaagaaa caagtacga tcatgaagaa gggaatggca aactcaatac 900
 gaataaaaagt gagaagactg aaagaaaatc gcatgatact cagacaccgc aagaaatata 960
 tgaagagctt gacaacttac tgagactaac ggcacaagaa atatatgaag agcgtaaaga 1020


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agggcatggc aaacccaata cgaataaaaag tgagaaggct gaaagaaaat cgcatagatac 1080
tcagacaacg caagaaatat gtgaagagtg tgaagaaggg catgacaaaa tcaataagaa 1140
taaaagtggg aatgctggaa taaaatcgta tgatactcag acaacgcaag aaatatgtga 1200
agagtgtgaa gaagggcatg acaaaatcaa taagaataaa agtggaaatg ctggaataaa 1260
atcgtatgat actcagacac cgcaggaaac aagtgcgct catgaagaag ggcatgacaa 1320
aatcaatacg aataaaaagtg agaaggctga aagaaaatcg catgatactc agacaacgca 1380
agaaatatgt gaagagtgtg aagaagggca tgacaaaatc aataagaata aaagtggaaa 1440
tgctggaata aaatcgtatg atactcagac accgcaggaa acaagtgcg ctcatgaaga 1500
agagcatggc aatctcaata agaataaaaag tgggaaggct ggaataaaaat cgcataatac 1560
tcagacaccg ctgaaaaaaa aagacttttg taaagaaggg tgtcatgggt gcaataataa 1620
gcccgaggat aatgaaagag acccgtcgtc gcctgatgat gatggtgggt gcgaatgcgg 1680
catgcgaat cactttgtct ttgactacaa gacaacactc ttgttaaaga gcctcaagac 1740
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<210> 38

<211> 445

<212> PRT

<213> Babesia microti

<400> 38

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Tyr Lys Asn Asp Thr Ser Leu Glu Thr Asn Val Val Thr Asn Tyr Ile
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20      25      30
His Asp Asn Ile Asn Pro Gln Asp Ala Cys Asp Ser Glu Pro Leu Glu
35      40      45
Gln Met Asp Ser Asp Thr Arg Val Leu Pro Glu Ser Leu Asp Glu Gly
50      55      60
Val Pro His Gln Phe Ser Arg Leu Gly His His Ser Asp Met Ala Ser
65      70      75      80
Asp Ile Asn Asp Glu Glu Pro Ser Phe Lys Ile Gly Glu Asn Asp Ile
85      90      95
Ile Gln Pro Pro Trp Glu Asp Thr Ala Pro Tyr His Ser Ile Asp Asp
100     105     110
Glu Glu Leu Asp Asn Leu Met Arg Leu Thr Ala Gln Glu Thr Ser Asp
115     120     125
Asp His Glu Glu Gly Asn Gly Lys Leu Asn Thr Asn Lys Ser Glu Lys
130     135     140
Thr Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln Glu Ile Tyr Glu
145     150     155     160
Glu Leu Asp Asn Leu Arg Leu Thr Ala Gln Glu Ile Tyr Glu Glu
165     170     175
Arg Lys Glu Gly His Gly Lys Pro Asn Thr Asn Lys Ser Glu Lys Ala
180     185     190
Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu
195     200     205
Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala
210     215     220
Gly Ile Lys Ser Tyr Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu
225     230     235     240
Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala
245     250     255
Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala

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	260		265		270										
His	Glu	Glu	Gly	His	Asp	Lys	Ile	Asn	Thr	Asn	Lys	Ser	Glu	Lys	Ala
	275						280					285			
Glu	Arg	Lys	Ser	His	Asp	Thr	Gln	Thr	Thr	Gln	Glu	Ile	Cys	Glu	Glu
	290					295					300				
Cys	Glu	Glu	Gly	His	Asp	Lys	Ile	Asn	Lys	Asn	Lys	Ser	Gly	Asn	Ala
305					310					315				320	
Gly	Ile	Lys	Ser	Tyr	Asp	Thr	Gln	Thr	Pro	Gln	Glu	Thr	Ser	Asp	Ala
				325					330					335	
His	Glu	Glu	Glu	His	Gly	Asn	Leu	Asn	Lys	Asn	Lys	Ser	Gly	Lys	Ala
			340					345					350		
Gly	Ile	Lys	Ser	His	Asn	Thr	Gln	Thr	Pro	Leu	Lys	Lys	Lys	Asp	Phe
	355						360					365			
Cys	Lys	Glu	Gly	Cys	His	Gly	Cys	Asn	Asn	Lys	Pro	Glu	Asp	Asn	Glu
	370					375					380				
Arg	Asp	Pro	Ser	Ser	Pro	Asp	Asp	Asp	Gly	Gly	Cys	Glu	Cys	Gly	Met
385					390					395					400
Thr	Asn	His	Phe	Val	Phe	Asp	Tyr	Lys	Thr	Thr	Leu	Leu	Leu	Lys	Ser
			405						410					415	
Leu	Lys	Thr	Glu	Thr	Ser	Thr	His	Tyr	Tyr	Ile	Ala	Met	Ala	Ala	Ile
			420					425					430		
Phe	Thr	Ile	Ser	Leu	Phe	Pro	Cys	Met	Phe	Lys	Ala	Phe			
	435						440					445			

<210> 39

<211> 32

<212> PRT

<213> Babesia microti

<220>

<221> VARIANT

<222> (3)...(3)

<223> Xaa = Glycine or Aspartic Acid

<221> VARIANT

<222> (5)...(5)

<223> Xaa = Proline or Isoleucine

<221> VARIANT

<222> (7)...(7)

<223> Xaa = Lysine or Threonine

<221> VARIANT

<222> (11)...(11)

<223> Xaa = Glutamic Acid or Glycine

<221> VARIANT

<222> (12)...(12)

<223> Xaa = Lysine or Asparagine

<221> VARIANT

<222> (14)...(14)

<223> Xaa = Glutamic Acid or Glycine

<221> VARIANT
 <222> (15)...(15)
 <223> Xaa = Isoleucine or Arginine

<221> VARIANT
 <222> (18)...(18)
 <223> Xaa = Histidine or Tyrosine

<221> VARIANT
 <222> (23)...(23)
 <223> Xaa = Threonine or Proline

<221> VARIANT
 <222> (26)...(26)
 <223> Xaa = Isoleucine or Threonine

<221> VARIANT
 <222> (27)...(27)
 <223> Xaa = Cysteine or Serine

<221> VARIANT
 <222> (28)...(28)
 <223> Xaa = Aspartic Acid or Glutamic Acid

<221> VARIANT
 <222> (29)...(29)
 <223> Xaa = Glutamic Acid or Alanine

<221> VARIANT
 <222> (30)...(30)
 <223> Xaa = Cysteine or Histidine

<400> 39
 Gly His Xaa Lys Xaa Asn Xaa Asn Lys Ser Xaa Xaa Ala Xaa Xaa Lys
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 Ser Xaa Asp Thr Gln Thr Xaa Gln Glu Xaa Xaa Xaa Xaa Xaa Glu Glu
 20 25 30

<210> 40
 <211> 2430
 <212> DNA
 <213> Babesia microti

<400> 40
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 ttggccactt taattataag gatagggaac ctttaacaat agtattttgta tacatgatcg 180
 atgaatcaga acaaaaataaa ttatcacatc cgaataaaaat tgataaaaatc aaaattttctg 240
 attatataat tgaatttgat gacaatgcta aattaccaac tggtagtggt attgatttaa 300
 acatctatac ttgcaaacat aataatccag tattaattga attttatggt tctatagaag 360
 gatctttctg ctattatttc tctcattgaa taatgatata aatgaatgga ataatcacao 420
 aataaaatat gataaaaaat ataaagaata tacggacatg aatgggtattc attattatta 480
 tattgatggt agtttacttg taagtggcga agttacatct aatttttcgtt atatttctaa 540
 agaatatgaa tatgagcata caggattagt aaaaaaatat tgtaatgaag aaagatgtgt 600


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aaaattggat aacattaaga taaaggataa taatttggaa atttatgtga aataatttaa 660
tgaagtataa tattatttat aataattcaa agattaatat aatcaattat tataattaca 720
aaaataatta attgtagaat attatattat taatcaattc agattataaa tacatatttt 780
tacatacatt tcaattttaa cattcaaatt aatgtcattt ttatctacat tattataatt 840
ataactataa tattcattaa atactattaa aaaaaatatc ctctacatta tattaattat 900
tatagtatgt cattatataa catattcaca acgtataaca aatcaatcat taacatatac 960
atatatgata tcattaataa tcaatattta attgatacaa taatcaatag tcatctgtaa 1020
tataatcatt gtatactaatt ttattataaa ttattacaaa atacactctt ttacttcatt 1080
ttatttctgt taaatttcat attctaatat tatattcatc ttctcatgt tactttaatc 1140
tatttccata tttatcccaa tttcttcatt taagactgag atgttcgttc gttcatacat 1200
aaataatgtg taaattttgt aatatataat aatgtataca tctgggtatta catctatttt 1260
gtaataaata ttaaaaaaac gggttaaagt agtgccctaa ttccaggaat tattacatta 1320
gaaactttgg tgattttagt gatttcggtg atcattgaaa gaaatgggtt gaaacttgca 1380
atactgtcat actcatcata atccccaatg ttggaaatca tgatgtcaac aattttatta 1440
aattcttctg ctgcactatt caactcctta atcatgtcct caaatgagt gttataatct 1500
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ttattcttct ccttgggttt ttcttcaatg tagtctttat gaccatcgtt caccctatct 1920
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actattcttc tagaatacgg aagaagctga tatccaaatc gttcactaga ccaaccagct 2040
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<210> 41

<211> 128

<212> PRT

<213> Babesia microti

<400> 41

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Tyr Cys Val Asp Lys Asn Asp Val Ser Leu Trp Lys Ser Lys Pro Ile
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Thr Thr Val Ser Thr Thr Asn Asp Thr Ile Thr Asn Thr His Thr Thr
20     25     30
Asn Val Ile Asn Ala Asn Leu Ile Gly His Phe Asn Tyr Lys Asp Arg
35     40     45
Glu Pro Leu Thr Ile Val Phe Val Tyr Met Ile Asp Glu Ser Glu Gln
50     55     60
Asn Lys Leu Ser His Pro Asn Lys Ile Asp Lys Ile Lys Ile Ser Asp
65     70     75     80
Tyr Ile Ile Glu Phe Asp Asp Asn Ala Lys Leu Pro Thr Gly Ser Val
85     90     95
Ile Asp Leu Asn Ile Tyr Thr Cys Lys His Asn Asn Pro Val Leu Ile
100    105    110
Glu Phe Tyr Val Ser Ile Glu Gly Ser Phe Cys Tyr Tyr Phe Ser His
115    120    125

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<210> 42
 <211> 1271
 <212> DNA
 <213> Babesia microti

<400> 42
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 ccatgacact aggggtccag tgctggaggc tattgtggcc cgcctgagtc agaggcccga 180
 acgcgtaagg ctagttagtc tatcggccac gcttccaaac tacgaagacg tggctagatt 240
 tctcactggt aatctagacc gagggctttt ctactttggc agccacttta ggctgtgcc 300
 cttggagcag gtgtattatg gcgtgaagga gaagaaggct atcaaacgtt tcaacgcaat 360
 caacgaaatt ctctaccaag aggtgattaa cgatgtttct agctgccaaa ttcttgtttt 420
 tgtgcattct agaaaggaaa cgtacaggac ggcaaaattt atcaaagaca cggccctttc 480
 acgggacaac ttgggagcct aaaccctaaa ccctaaaccc taaaccctaa ccctaaaccc 540
 taaaccctaa accctaaacc ctaaacccta accctaaccc taaccctaac cctaaccctag 600
 ccttcattga cgtctatccc caatcttaga aaaatcttca aatcgattct agaataactg 660
 gaagcaatta tcagaaattg tataactgct tattagctta ttagcttatt agttaggatg 720
 tatgcacatt gatgacaact agatgcagca ccacaatcac taccacgtac caatcatata 780
 ccaataatgt actaataatg taccaataac tatggtttat aaagatgggtg tcatttaaatt 840
 caatattagt tccttatatt acactctttt taatgagcgg tgctgtcttt gcaggtgata 900
 ccgatcgcca agctggtggg cctagtggaa ctggtgggcc tagtgaagct ggtgggccta 960
 gtgaagctgg tgggcctagt gaagctgggtg ggcctagtga agctggtggg cctagtgaag 1020
 ctggtgggcc tagtgaagct ggtgggccta gtgaagctgg tgggcctagt gaagctggtg 1080
 ggcctagtgg aactggttgg cctagtgaag ctggtgggcc tagtgaagct ggtgggccta 1140
 gtgaagctgg tgggcctagt ggaactgggtt ggcctagtga agctggttgg cctagtgaag 1200
 ctggttggcc tagtgaagct ggttggccta gtgaagctgg ttggcctagt gaagctggtt 1260
 ggcctagtga a 1271

<210> 43
 <211> 166
 <212> PRT
 <213> Babesia microti

<400> 43
 Glu Lys Thr His Ile Ile Val Thr Thr Pro Glu Lys Phe Asp Val Val
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 20 25 30
 Ile Ile Asp Glu Ile His Leu Leu His Asp Thr Arg Gly Pro Val Leu
 35 40 45
 Glu Ala Ile Val Ala Arg Leu Ser Gln Arg Pro Glu Arg Val Arg Leu
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 Val Gly Leu Ser Ala Thr Leu Pro Asn Tyr Glu Asp Val Ala Arg Phe
 65 70 75 80
 Leu Thr Val Asn Leu Asp Arg Gly Leu Phe Tyr Phe Gly Ser His Phe
 85 90 95
 Arg Pro Val Pro Leu Glu Gln Val Tyr Tyr Gly Val Lys Glu Lys Lys
 100 105 110
 Ala Ile Lys Arg Phe Asn Ala Ile Asn Glu Ile Leu Tyr Gln Glu Val
 115 120 125
 Ile Asn Asp Val Ser Ser Cys Gln Ile Leu Val Phe Val His Ser Arg
 130 135 140

Lys Glu Thr Tyr Arg Thr Ala Lys Phe Ile Lys Asp Thr Ala Leu Ser
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 Arg Asp Asn Leu Gly Ala
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<210> 44
 <211> 154
 <212> PRT
 <213> Babesia microti

<400> 44
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 35 40 45
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
 50 55 60
 Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro
 65 70 75 80
 Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly
 85 90 95
 Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
 100 105 110
 Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro
 115 120 125
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 130 135 140
 Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu
 145 150

<210> 45
 <211> 4223
 <212> DNA
 <213> Babesia microti

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 gaagctagcg ctccccaccc catcccaaca cacacacaca cacacacaca cacacacaca 540
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tgtaacagcc aataattgtg atg

4223

<210> 46
 <211> 294
 <212> PRT
 <213> Babesia microti

<400> 46
 Leu Trp Phe Ile Lys Met Val Ser Phe Lys Ser Ile Leu Val Pro Tyr
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 Ile Thr Leu Phe Leu Met Ser Gly Ala Val Phe Ala Gly Asp Thr Asp
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 35 40 45
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
 50 55 60
 Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro
 65 70 75 80
 Ser Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly
 85 90 95
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
 100 105 110
 Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro
 115 120 125
 Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly
 130 135 140
 Trp Pro Ser Glu Arg Phe Gly Tyr Gln Leu Leu Trp Tyr Ser Arg Arg
 145 150 155 160
 Ile Val Ile Phe Asn Glu Ile Tyr Leu Ser His Ile Tyr Glu His Ser
 165 170 175
 Val Met Ile Leu Glu Arg Asp Arg Val Asn Asp Gly His Lys Asp Tyr
 180 185 190
 Ile Glu Glu Lys Thr Lys Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu
 195 200 205
 Lys Cys Phe Pro Glu Gln Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala
 210 215 220
 Arg Ile Ile Asp Asn Ala Ser Thr Ile Ser Ser Lys Tyr Lys Leu Leu
 225 230 235 240
 Val Asp Glu Ile Ser Asn Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala
 245 250 255
 Ala Asp Asp Phe Asp His Phe Arg Asn Ile Trp Lys Ser Ile Val Pro
 260 265 270
 Lys Asn Asn Phe Leu Tyr Cys Asp Leu Leu Leu Lys His Leu Ile Arg
 275 280 285
 Leu Thr Pro Arg Lys Ser
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<210> 47
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide of repeat region of antigen

BMNI-3 (SEQ ID NO:3)

<400> 47
 Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly
 1 5 10 15
 Trp Thr Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Ser
 20 25 30

<210> 48
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide of repeat region of antigen
 BMNI-3 (SEQ ID NO:3)

<400> 48
 Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Gly Thr Gly Trp
 1 5 10 15
 Pro Ser Glu Ala Gly Trp Gly Ser Glu Ala Gly Trp Ser Ser
 20 25 30

<210> 49
 <211> 367
 <212> PRT
 <213> Babesia microti

<400> 49
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 20 25 30
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 35 40 45
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser
 50 55 60
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly
 65 70 75 80
 Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Ser Glu Ala Gly Gly
 85 90 95
 Trp Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Ser Ser Glu
 100 105 110
 Arg Phe Gly Tyr Gln Leu Leu Pro Tyr Ser Arg Arg Ile Val Ile Phe
 115 120 125
 Asn Glu Val Cys Leu Ser Tyr Ile Tyr Lys His Ser Val Met Ile Leu
 130 135 140
 Glu Arg Asp Arg Val Asn Asp Gly His Lys Asp Tyr Ile Glu Glu Lys
 145 150 155 160
 Thr Lys Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu Lys Cys Phe Pro
 165 170 175
 Glu Gln Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala Arg Ile Phe Asp
 180 185 190
 Asn Ala Ser Thr Ile Ser Ser Lys Tyr Lys Leu Leu Val Asp Glu Ile

195	200	205
Ser Asn Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala Ala Asp Asn Phe		
210	215	220
Asp His Phe Arg Asn Ile Trp Lys Ser Ile Val Leu Lys Asp Met Phe		
225	230	235
Ile Tyr Cys Asp Leu Leu Leu Gln His Leu Ile Tyr Lys Phe Tyr Tyr		
245	250	255
Asp Asn Thr Val Asn Asp Ile Lys Lys Asn Phe Asp Glu Ser Lys Ser		
260	265	270
Lys Ala Leu Val Leu Arg Asp Lys Ile Thr Lys Lys Asp Gly Asp Tyr		
275	280	285
Asn Thr His Phe Glu Asp Met Ile Lys Glu Leu Asn Ser Ala Ala Glu		
290	295	300
Glu Phe Asn Lys Ile Val Asp Ile Met Ile Ser Asn Ile Gly Asp Tyr		
305	310	315
Asp Glu Tyr Asp Ser Ile Ala Ser Phe Lys Pro Phe Leu Ser Met Ile		
325	330	335
Thr Glu Ile Thr Lys Ile Thr Lys Val Ser Asn Val Ile Ile Pro Gly		
340	345	350
Ile Lys Ala Leu Thr Leu Thr Val Phe Leu Ile Phe Ile Thr Lys		
355	360	365

<210> 50

<211> 1908

<212> DNA

<213> Babesia microti

<400> 50

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ggcagtgtaa	atgaacaacc	taatactgtt	ggtatgagtt	tagaacaatt	catcaagaac	360
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<210> 51
 <211> 1460
 <212> DNA
 <213> Babesia microti

<400> 51

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taaatactat	gttttttgatg	TTAAAAagcg	AAAAACacac	TTAatgcac	attTTAACat	360
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caccgcagga	aacaagtgc					1460

<210> 52
 <211> 503
 <212> PRT
 <213> Babesia microti

<400> 52

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			20					25					30		
Tyr	Ile	Ser	Lys	Glu	Tyr	Glu	Tyr	Glu	His	Thr	Glu	Leu	Ala	Lys	Glu
			35				40					45			
His	Cys	Lys	Lys	Glu	Lys	Cys	Val	Asn	Val	Asp	Asn	Ile	Glu	Asp	Asn
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<210> 53
 <211> 275
 <212> PRT
 <213> Babesia microti

<400> 53

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Pro Pro Asp Ile Glu Pro Thr Ser Thr Ser Leu Glu Thr Asn Val Val
 35          40          45
Thr Asn Tyr Ile Pro Glu Pro Asn Ala Asp Ser Glu Ser Val His Val
 50          55          60
Glu Ile Gln Glu His Asp Asn Ile Asn Pro Gln Asp Ala Cys Asp Ser
 65          70          75          80
Glu Pro Leu Glu Gln Met Asp Ser Asp Thr Arg Val Leu Pro Glu Ser
 85          90          95
Leu Asp Glu Gly Val Pro His Gln Phe Ser Arg Leu Gly His His Ser
 100         105         110
Asp Met Ala Ser Asp Ile Asn Asp Glu Glu Pro Ser Phe Lys Ile Gly
 115         120         125
Glu Asn Asp Ile Ile Gln Pro Arg Trp Glu Asp Thr Ala Pro Tyr His
 130         135         140
Ser Ile Asp Asp Glu Glu Leu Asp Asn Leu Met Arg Leu Thr Ala Gln
 145         150         155         160
Glu Thr Ser Asp Asp His Glu Glu Gly Asn Gly Lys Leu Asn Thr Asn
 165         170         175
Lys Ser Glu Lys Thr Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln
 180         185         190
Glu Ile Tyr Glu Glu Leu Asp Asn Leu Leu Arg Leu Thr Ala Gln Glu
 195         200         205
Ile Tyr Glu Glu Arg Lys Glu Gly His Gly Lys Pro Asn Thr Asn Lys
 210         215         220
Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu
 225         230         235         240
Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys
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Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu
 260         265         270
Thr Ser Asp
 275

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<210> 54
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR Primer

<400> 54

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22

<210> 55
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 55
tggtattcta gaagaatagt tata

24

<210> 56
<211> 306
<212> DNA
<213> Babesia microti

<400> 56
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ggcctagtga agctggtggg cctagtggaa ctggttggcc tagtgaagct ggtgggccta 180
gtggaactgt tgggccagct gaagctggtg ggcctagtga agctggtggg cctagtggaa 240
ctggttggcc tagtgaagct ggttggccta gtgaagttgg ttggccatt gaaccatttg 300
gatatc 306

<210> 57
<211> 318
<212> DNA
<213> Babesia microti

<400> 57
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ggcctagtga agctggtggg cctagtggaa ctggttggcc tagtgaagct ggtgggccta 180
gtggaactgt tgggccagct gaagctggtg ggcctagtga agctggtggg cctagtggaa 240
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gatatcacct tctttggt 318

<210> 58
<211> 358
<212> DNA
<213> Babesia microti

<400> 58
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ggcctagtga agctggtggg cctagtgaag ctggtgggcc tagtgaagct ggtgggccta 180
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ctggttggcc tagtgaagct ggtgggccta gtggaactgg ttggcctagt gaagctggtt 300
ggcctagtga agctggttgg cctagtgaag ctggttggcc tagtgaagct ggttggcc 358

<210> 59
<211> 409

<212> DNA

<213> Babesia microti

<400> 59

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gcctagtga	gctggtgggc	ctagtgaagc	tggtgggcct	agtgaagctg	gtgggcctag	180
tgaagctggt	gggcctagtg	aagctggtgg	gcctagtga	gctggtgggc	ctagtgaagc	240
tggttggcct	agtgaagctg	gtgggcctag	tgggaactggt	tggcctagtg	aagctggttg	300
gcctagtga	gctggttggc	ctagtgaagc	tggttggcct	agtgaagctg	gttggcctag	360
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<210> 60

<211> 351

<212> DNA

<213> Babesia microti

<400> 60

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ctggtgggcc	tagtgaagct	ggtgggccta	gtgaagctgg	tgggcctagt	gaagctggtg	120
ggcctagtga	agctggtggg	cctagtgaag	ctggtgggcc	tagtgaagct	ggtgggccta	180
gtgaagctgg	tgggcctagt	gaagctggtt	ggcctagtga	agctggttgg	cctagtgaag	240
ctggtgggcc	tagtgaagct	ggttggccta	gtgaagctgg	ttggcctagt	gaagctggtt	300
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<210> 61

<211> 410

<212> DNA

<213> Babesia microti

<400> 61

aggtgatacc	gatcgcggaag	ctggtgggcc	tagtgaagct	gttgggccta	gtgaagctgg	60
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tagtgaagct	ggtgggccta	gtgaagctgg	tgggcctagt	gaagctggtg	ggcctagtga	180
agctggtggg	cctagtgaag	ctggtgggcc	tagtgaagct	ggtgggccta	gtgaagctgg	240
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tagtgaagct	ggttggccta	gtgaagctgg	ttggcctagt	gaagctggtt	ggcctagtga	360
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<210> 62

<211> 416

<212> DNA

<213> Babesia microti

<400> 62

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ggcctagtga	agctggtggg	cctagtgaag	ctggtgggcc	tagtgaagct	ggtgggccta	180
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ctggtgggcc	tagtgaagct	ggttggccta	gtgaagctgg	ttggcctagt	gaagctggtg	300
ggcctagtgg	aactggttgg	cctagtgaag	ctggttggcc	tagtgaagct	ggttggccta	360
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<210> 63

<211> 356
 <212> DNA
 <213> Babesia microti

<400> 63
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 ctggttggcc tagtgaagct ggttggccta gtgaagctgg ttggcctagt gaagctgggt 300
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<210> 64
 <211> 285
 <212> DNA
 <213> Babesia microti

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<210> 65
 <211> 342
 <212> DNA
 <213> Babesia microti

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 ggcctagtga agctggtggg cctagtgaag ctggtgggcc tagtgaagct ggtgggccta 180
 gtgaagctgg tgggcctagt ggaactgggt ggcctagtga agctggttgg cctagtgaag 240
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 ggcctagtga acgatttggg tatcagcttc tttggtattc ta 342

<210> 66
 <211> 363
 <212> DNA
 <213> Babesia microti

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 gaa 363

<210> 67
 <211> 363
 <212> DNA

<213> Babesia microti

<400> 67

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ctggttggcc	tagtgaagct	ggttggccta	gtgaagctgg	ttggcctagt	gaagctggtt	300
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gaa						363

<210> 68

<211> 101

<212> PRT

<213> Babesia microti

<400> 68

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			20					25					30		
Val	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser
		35					40					45			
Gly	Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly
	50					55				60					
Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr
65				70				75						80	
Gly	Trp	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu	Val	Gly	Trp	Pro	Ile
				85				90						95	
Glu	Pro	Phe	Gly	Tyr											
			100												

<210> 69

<211> 105

<212> PRT

<213> Babesia microti

<400> 69

Ala	Gly	Asp	Thr	Asp	Arg	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly
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Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr
			20					25					30		
Val	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser
		35					40					45			
Gly	Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly
	50					55				60					
Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr
65				70				75						80	
Gly	Trp	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu	Val	Gly	Trp	Pro	Asn
				85				90						95	
Glu	Pro	Phe	Gly	Tyr	His	Leu	Leu	Trp							
			100					105							

<210> 70

<211> 118
 <212> PRT
 <213> Babesia microti

<400> 70
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 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala
 20 25 30
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser
 35 40 45
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly
 50 55 60
 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala
 65 70 75 80
 Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser
 85 90 95
 Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp
 100 105 110
 Pro Ser Glu Ala Gly Trp
 115

<210> 71
 <211> 136
 <212> PRT
 <213> Babesia microti

<400> 71
 Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly
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 20 25 30
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser
 35 40 45
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly
 50 55 60
 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala
 65 70 75 80
 Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser
 85 90 95
 Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp
 100 105 110
 Pro Ser Glu Ala Gly Trp Pro Ser Glu Arg Phe Gly Tyr Gln Leu Leu
 115 120 125
 Trp Tyr Ser Arg Arg Ile Val Ile
 130 135

<210> 72
 <211> 116
 <212> PRT
 <213> Babesia microti

<400> 72
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<210> 74
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<212> PRT
<213> Babesia microti
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<400> 74

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			20					25					30		
Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser
		35					40					45			
Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly

50 55 60
 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala
 65 70 75 80
 Gly Gly Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser
 85 90 95
 Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp
 100 105 110
 Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala
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<210> 75
 <211> 118
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 <213> Babesia microti

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 35 40 45
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly
 50 55 60
 Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala
 65 70 75 80
 Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser
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<210> 76
 <211> 94
 <212> PRT
 <213> Babesia microti

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 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser
 35 40 45
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp
 50 55 60
 Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala
 65 70 75 80
 Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp
 85 90

<400> 77

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<211> 120
<212> PRT
<213> Babesia microti
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<400> 78

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<210> 79
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<212> PRT
<213> Babesia microti
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<400> 79

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 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser
 35 40 45
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly
 50 55 60
 Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala
 65 70 75 80
 Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser
 85 90 95
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 100 105 110
 Tyr Gln Leu Leu Trp Tyr Ser Arg
 115 120

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 <211> 29
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 <213> Artificial Sequence

<220>
 <223> PCR Primer

<400> 80
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29

<210> 81
 <211> 43
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR Primer

<400> 81
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43

<210> 82
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR Primer

<400> 82
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32

<210> 83
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 <212> DNA
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<220>

<223> PCR Primer

<400> 83

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32

<210> 84

<211> 2001

<212> DNA

<213> Babesia

<400> 84

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<210> 85

<211> 666

<212> PRT

<213> Babesia

<400> 85

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5

10

15

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 35 40 45
 Thr Cys Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu Ile Ile Ser
 50 55 60
 Asp Cys Glu Lys Lys Gly Ile Lys Ile Asn Arg Asp Val Ile Ser Ser
 65 70 75 80
 Tyr Lys Leu Leu Leu Ser Thr Ile Thr Tyr Ile Val Gly Ala Gly Val
 85 90 95
 Glu Ala Val Thr Val Ser Val Ser Ala Thr Ser Asn Gly Thr Glu Ser
 100 105 110
 Gly Gly Ala Gly Ser Gly Thr Gly Thr Ser Val Ser Ala Thr Ser Thr
 115 120 125
 Leu Thr Gly Asn Gly Gly Thr Glu Ser Gly Gly Thr Ala Gly Thr Thr
 130 135 140
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 145 150 155 160
 Ser Gly Ala Ala Ser Gly Lys Ala Gly Thr Gly Thr Ala Gly Thr Thr
 165 170 175
 Thr Ser Ser Glu Gly Ala Gly Ser Asp Lys Ala Gly Thr Gly Thr Ser
 180 185 190
 Gly Thr Thr Thr Ser Ser Gly Thr Gly Ala Gly Gly Ala Gly Ser Gly
 195 200 205
 Gly Pro Ser Gly His Ala Ser Asn Ala Lys Ile Pro Gly Ile Met Thr
 210 215 220
 Leu Thr Leu Phe Ala Leu Leu Thr Phe Ile Val Asn Ile Pro Glu Pro
 225 230 235 240
 Asn Ala Asp Ser Glu Ser Val His Val Glu Ile Gln Glu His Asp Asn
 245 250 255
 Ile Asn Pro Gln Asp Ala Cys Asp Ser Glu Pro Leu Glu Gln Met Asp
 260 265 270
 Ser Asp Thr Arg Val Leu Pro Glu Ser Leu Asp Glu Gly Val Pro His
 275 280 285
 Gln Phe Ser Arg Leu Gly His His Ser Asp Met Ala Ser Asp Ile Asn
 290 295 300

Asp Glu Glu Pro Ser Phe Lys Ile Gly Glu Asn Asp Ile Ile Gln Pro
 305 310 315 320
 Pro Trp Glu Asp Thr Ala Pro Tyr His Ser Ile Asp Asp Glu Glu Leu
 325 330 335
 Asp Asn Leu Met Arg Leu Thr Ala Gln Glu Thr Ser Asp Asp His Glu
 340 345 350
 Glu Gly Asn Gly Lys Leu Asn Thr Asn Lys Ser Glu Lys Thr Glu Arg
 355 360 365
 Lys Ser His Asp Thr Gln Thr Pro Gln Glu Ile Tyr Glu Glu Leu Asp
 370 375 380
 Asn Leu Leu Arg Leu Thr Ala Gln Glu Ile Tyr Glu Glu Arg Lys Glu
 385 390 395 400
 Gly His Gly Lys Pro Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys
 405 410 415
 Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu
 420 425 430
 Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys
 435 440 445
 Ser Tyr Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu
 450 455 460
 Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys
 465 470 475 480
 Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu
 485 490 495
 Gly His Asp Lys Ile Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys
 500 505 510
 Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu
 515 520 525
 Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys
 530 535 540
 Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu
 545 550 555 560
 Glu His Gly Asn Leu Asn Lys Asn Lys Ser Gly Lys Ala Gly Ile Lys
 565 570 575
 Ser His Asn Thr Gln Thr Pro Leu Lys Lys Lys Asp Phe Cys Lys Glu
 580 585 590

Gly Cys His Gly Cys Asn Asn Lys Pro Glu Asp Asn Glu Arg Asp Pro
595 600 605

Ser Ser Pro Asp Asp Asp Gly Gly Cys Glu Cys Gly Met Thr Asn His
610 615 620

Phe Val Phe Asp Tyr Lys Thr Thr Leu Leu Leu Lys Ser Leu Lys Thr
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<210> 86

<211> 3402

<212> DNA

<213> Babesia

<400> 86

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<210> 87

<211> 1132

<212> PRT

<213> Babesia

<400> 87

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35 40 45

Leu Leu Gln Val Ser Ile Ile Ala Ser Tyr Gly Pro Ser Gly Asp Tyr
50 55 60

Ser Ser Phe Val Phe Thr Pro Val Val Thr Ala Asp Thr Asn Val Phe
65 70 75 80

Tyr Lys Leu Glu Thr Asp Phe Lys Leu Asp Val Asp Val Ile Thr Lys
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Thr Ser Leu Glu Leu Pro Thr Ser Val Pro Gly Phe His Tyr Thr Glu
100 105 110

Thr Ile Tyr Gln Gly Thr Glu Leu Ser Lys Phe Ser Lys Pro Gln Cys

115	120	125
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Ile Ser Ser Leu Lys Ser Leu Ile Lys Ala Ile Arg Asp Asn Ile Thr 260 265 270		
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Ala Leu Thr Cys Leu Thr Thr His Leu Ile Tyr His Ser Lys Val Asp 290 295 300		
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Leu	Asp	Asn	Asp	Glu	Asp	Tyr	Lys	Ile	Asn	Phe	Arg	Glu	Met	Val	Asn				
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Ser	Thr	Leu	Thr	Gly	Asn	Gly	Gly	Thr	Glu	Ser	Gly	Gly	Thr	Ala	Gly				
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Met	Asp	Ser	Asp	Thr	Arg	Val	Leu	Pro	Glu	Ser	Leu	Asp	Glu	Gly	Val
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		915					920					925			
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		930					935					940			
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Glu Glu Glu His Gly Asn Leu Asn Lys Asn Lys Ser Gly Lys Ala Gly 1025 1030 1035 1040		
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 <223> PCR Primer

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29

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36

<210> 90
 <211> 27

<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 90
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27

<210> 91
<211> 1148
<212> DNA
<213> Babesia microti

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<210> 92
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tgagggagta taggtatgag aaaattgtct catttgatc ctgacctccm cttgtatcct 540
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<210> 93
<211> 631
<212> DNA
<213> Babesia microti

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<210> 94
<211> 632
<212> DNA
<213> Babesia microti

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<220>
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aatttaggaa atataaatca taagcagata gatcaaaaac agaatatctg gaataatgaa 180
acataaaatg gaaatctaaa ctagaagtaa gttttataaa gccacaggca ggtactgaac 240
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<210> 95
<211> 426
<212> DNA
<213> Babesia microti

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<220>
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 <222> (1)...(426)
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 tcatacnaaa aataataaat acctctcatg gagcttgcca tttcctctgc atcttttttg 360
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 gaaccc 426

<210> 96
 <211> 472
 <212> DNA
 <213> Babesia microti

<220>
 <221> misc_feature
 <222> (1)...(472)
 <223> n=A,T,C or G

<400> 96
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<210> 97
 <211> 867
 <212> DNA
 <213> Babesia microti

<220>
 <221> misc_feature
 <222> (1)...(867)
 <223> n=A,T,C or G

<400> 97
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 cttaatgata tttttaaaaa ttcgttatca tcgggcactag aaatatcaaa tgattttat 240
 gttatgtcat tgactgtata agtactactt cgattttgag gaataataaa ttctgggtca 300


```

tccctcaaaa caaatttgct agattgnaaa ccagattgct catagtaaac ggggtgaagta 360
gaactcgaag tcttatcttg aatcctaaca acmatcaaag gatatttagt ggtgtatgaa 420
acggtcctag tgataacaty catggactgt ggaattaatt gattgccaaa tattacacaa 480
ccaattgaaa accctgtagc tggggtaact ttggtaaaga ttccatcagt agaaaaaacg 540
taactagaag aaagaccctc tggaaacttg tcaacaaatc ctatttcgtt tatgttaaga 600
ttcacaatat ttgtgacagc aacatcttgt gtggtctcca gagacggaga aattgttgat 660
gtggcagctg ttgttgatgt ggtagctgtt gttgatgtgg cagttgttgt tgatgtggca 720
gttgtgtgtg atgtggtagc tgttgttgat gtagcagatg ttgttgatgt agcagtacat 780
actgacagta catgtgcatg tgtgtgtaaa taggattctt gttaaagcaa gtatatcctc 840
actgctgatt tgtctgatat tacctcc 867

```

```

<210> 98
<211> 815
<212> DNA
<213> Babesia microti

```

```

<400> 98
tagtcattag attatcatga caccaataag ctttttatct tgaagttggt ttatatatta 60
atacaaccat agcatcataa aagctacatt tgtttttttt atcttaaccc atggatcatc 120
agtctttttc ctttattatt catcattgat tgtccttaaa tgcctaaagc atctgcccct 180
ttaaactact tctttctaaa ttagcatata ctctatatgg tcatacctat tctgtgtaat 240
catcaggttc cctgtgcagg ggaaaggagg aacgctcaag cactgaggaa tcatcccgtc 300
gtgtgataac gttgatggaa gacaagtgat acagttagtt gttcaaacia ataagcatat 360
tttaagggga agaatagtgt cgtactaact aaaatctaata ttgaccataa tacgcacatt 420
agtttgtttg tgcctcaattt ttttaatgaa tcaggccccc gatttatatt tgtgaaagtc 480
catgtggggg cgtaaggatg ggatagttta ttacagtag cttctctggg gaaaggaaaag 540
caaagcccca actgtataga gttcattgga gctgtcacct acgcccctgc cttcctgtcc 600
ctttagagtg cctcagtttg ctgtgtggca agagtctctc cctgctcctg ctctcctagc 660
cccctctgcc tgcctcccc agttgatgag agagtccact gttggagaag ttaactctaa 720
tcttacacct ggggagagct actggaaatt aattttccat gtaactggct ttgagttcta 780
gcaggcttta gatatttagaa gtttttgtgt gtgtg 815

```

```

<210> 99
<211> 1225
<212> DNA
<213> Babesia microti

```

```

<220>
<221> misc_feature
<222> (1)...(1225)
<223> n=A,T,C or G

```

```

<400> 99
atttgttaaa gggttaccat ggccatggca atttttgtaa aagaaagcat ttaaattggg 60
gcttgtttac agtttaagag ggttgactca tgaccatcat tgtgggaagc atggtagcag 120
gttggcatgg tgctggatca gtaattgaga gctttacact ctgacctaag ggcacagac 180
aaagaaaagc ctggctcctg tgtgggcttg aagcctcaaa atccccctct aatgacacac 240
ttccctcaag tacatactta ttccctaaatc cttctcaaac agtttcaaaa cttgtgcctg 300
agtgttcaaa tatatgaacc tacaggggcc attcacattc aaattatcac aggcagataa 360
gttactagtc atggaagttc aaatatatac tttgttatga aaatataaat atgctttaga 420
atctggggaa cccagaaggg tggagatggg gtcaagattc tctgagatgg ggtcaagatt 480
ctctgtgtct ccctgggcct ggctggaatg tccctcctgt cttccaagtc ctctgttcca 540

```



```

ggtgaccatg tccccatccc agtcccctcg atgggtcctca tgccctcctc tcagttcctg 600
gctgctcccc cccccccgcc acatcccat caagggaactg gccgggtctc atactgctac 660
ccatgcaggg tgctcatgcc cttgcgcccc ggcaccttta gtgtttcngt cccttcccgg 720
ccccactcag cgccacccca tgctgcaggg ccgccgtccg cgccacggga ccttgcaagt 780
acaagcttga gccgcttccc ccctggcgyt gcgactgcgg tggttgccgc cttgcgggam 840
tccggcggtc gttccgacgt cacctactcg stgcttgtgc ctgctctgcg ggccgcgacg 900
gtccggcggg cgcatgccaa ccctgcgggc cagcgtggc cttcgtcccg cgtcaggcag 960
ggttgcgaga acgcgcgcgc acgsttgctg cacctgcggc cgggcgcgcg ctataccgtg 1020
cgcgtagggc cgctcaacgg tgtctcaggc ccagcggccg ccgcggaagc cacctacgcg 1080
caggtcaccg tgtccaccgg acccgagggt gaggccacgc gcccagcgg agtcggtccc 1140
cctccccaac cgcagttccc tctatgcatt ccaagtcatt caggaacca cgtgactaca 1200
ccccatgccc caggtgcggc acgag                                     1225

```

```

<210> 100
<211> 537
<212> DNA
<213> Babesia microti

```

```

<220>
<221> misc_feature
<222> (1)...(537)
<223> n=A,T,C or G

```

```

<400> 100
aaagaaagag aagaaggagg agaagagcaa ggggaatgaa tgagagagga gagaaggga 60
tagaagagag gggagggcag aggaggggaa gcagagggga ggggaaagga aggagaaaga 120
gaacagagac agaggggaagg tcagggtacat cactgtccaa gagatcacat attatccaag 180
cmacggacag agcttttagga agtgtacaga gaggcacctt tcacccagtg tcctataatg 240
accatttctg caaattctct agaacttagt tccattctgc acaacccctc catacctgtc 300
atcatgtgct tcacttacta gcctcaagta agctgttaag tgttccagtg ttatatgcca 360
ttctagtagc ttcatccagt gactgataga agcagagcta aacnccnca gttaaacaat 420
aaactgaatc cctagaaccc mgtgaccgag agtgktctca taattcttaa aaagatgcta 480
ttaaatttta tcctgtatca tactacatta tctttttttc ttccttcccc tccccccc 537

```

```

<210> 101
<211> 543
<212> DNA
<213> Babesia microti

```

```

<220>
<221> misc_feature
<222> (1)...(543)
<223> n=A,T,C or G

```

```

<400> 101
acataacact agggacttgg cattgcatat ctgtaaatat aattgaaacc aaaataaaat 60
attggtgagt tccataggtt ggggtgttca cagtgcattt taaaagtga attcttgaga 120
gctggtttgg aggttctatt aggggagtg ggtacttgta taccttggac tgaagaccag 180
tcctcctcta ttccgggaag gycgycctct tcgaccaagc atgcacttca ggatggacac 240
acatggagtg ttgagggagg aaagagatcc ccctaagcca gatagatcaa ctaaataaac 300
cttggaataa aatgggggtga cagatgtarc avcgagaatg ccctcacata ctgaaaatga 360

```



```

aataattamc cmccwttagt ttttccatyt gatacctagg cmctytctaa ttttaattcca 420
mcattctkga aaagtgkstt ttgaaagatt ggtggggcaac cccccaatt antcccctnc 480
caatggggta agggcaaaaa accagggggg aaattccaaa aattattgnt ttgtaaaggg 540
gaa 543

```

```

<210> 102
<211> 811
<212> DNA
<213> Babesia microti

```

```

<220>
<221> misc_feature
<222> (1)...(811)
<223> n=A,T,C or G

```

```

<400> 102
tggataagga tgaagtcagt tagaccaata ctaattcatt ttattacatt ctttttaaca 60
agtggaaatg tctttgcagg aaatggtgat gttaatcaat attcaagtga ttttggacga 120
gcattaaacg atcttatgat cgcttttaac gaggctaaaa aaatgtatgc aaaattttct 180
gaacagatca cggacactat gattcatacc tgcaaaaaata gtattgatat actagaagca 240
gatgagaaga atggtggtca taaaaattac cttgaaaaga aagaaattga gctcaaaagt 300
aaaattgtgg aatttaacgc catTTTTTca aacattgatt taaataatan gtacggktaa 360
aaatgaaata attaaactgc ttaatgatat atccactatc tctaccgata ttaagtcaat 420
tgttgatgaa atatactata aggctcttgg tacaattgaa ggtgaaaatg ctgaaaattt 480
tgagtatgaa attaagaaaa agaaagctga actacttaga aacctgctga atgataatat 540
taaaccaatt atggggatat ttaactgaga tatcaatatg ccatccaatt atatcaaata 600
aagcgaatTT atgatatcaa gaaagcattt gaaaagcacg aattagaagc taatgttttg 660
atatcccaga tattagaaaa tatcagaatt ttggcactaa ttttaatgac attttaaattg 720
aagtgaatgg ngcaattgaa gaatttaata aaactattgg acgtcatgaa taacaccatt 780
ggggaccctt ggtattggta ttgacagcgg g 811

```

```

<210> 103
<211> 2966
<212> DNA
<213> Babesia microti

```

```

<400> 103
ctcgtgccga atgtcattta tgatctaata atattgtatt atctctaata ttatgggtata 60
atagatactg tgaaaataaa ttcaactgga gataaggaaa ccatttgtat agatatttta 120
tacaaattat tatgaaataa tctaaataaa tgacaaaaaa tcgattatac aaatcacatt 180
aatgacaaac aaacttgtat acatatattg attaacatta caaaactaaa ttataatatt 240
tagattgata attgttataa tacttaacaa tattctactt tttaatataa ttttttattc 300
aataatatac tctttcatat tttgtactat tttatataat catatatatt atataattat 360
atatatttga taattgaata tatcaataat gatgatatac atgaatatgc atatataccc 420
catataatgt tattatattt agtgcttaca ttattaatta taaatatatt taaataatta 480
aataataatg aaaattaaca tagacaatat aatattaatc aatttgataa tattattgaa 540
tcgtaatgta gtatattgtg tggataaaaa tgatgtttca ttatggaaat caaaacctat 600
aacaactgtc agtaccacta atgatactat tacaaataaa tacactagta ctgtaattaa 660
tgccaatttt gctagctacc gtgaatttga ggatagggaa cctttaacaa taggatttga 720
atacatgatc gataaatcac aacaagataa attatcacat ccaaataaaa ttgataaaat 780
caaaatttct gattatataa ttgaatttga tgacaatgct aaattaccaa ctggtagtgt 840
taatgatata tccatcatta cttgcaagca taataatcca gtattaatta gattctcatg 900

```



```

ttaaataagaa ggatctatct gctattatct ctacttattg aataatgata caaataaatg 960
gaataatcac aaattaaaaat atgataaaac atacaatgaa catactgaca ataatggtat 1020
taattattat aaaatcgatt atagtgaatc tacagaacct actaccgaat ctactacctg 1080
tttttgtttt cgcaaaaaaaa atcataaatc tgagcgtaaa gaattagaaa attataaata 1140
tgaggggtaca gaattagcaa gaatacattg taataaaggg aaatgtgtaa aattgggtga 1200
cattaagata aaggataaga atttggaat ttatgtgaaa cagttaatgt ctgtaaatac 1260
tccagtaaat ttgacaacc ctacatcgat taatctacca ctgtcagtac taccaatgat 1320
actattacaa ataaatacac tggactataa ttaatgcaa tattgttgag tactgtgatt 1380
gaggatgacc ttacaatagg ttagatcctt agataaatca caacaaaata aattatcaca 1440
tccaaataaaa attgataaaa tcaaawttty tgattatata attgaatttg cagagatgt 1500
taaattaaca acaattggta ctgtcaatat tatatatatc tatacttgca agcataataa 1560
tccagtatta gttgaattta tagtttctat agaagratct tactacaatt acttctactc 1620
aatgaataat gatacaataa aatggaataa tcataaaata aaatatgata caagatttaa 1680
tgaacatact gacatgaatg gtattaatta ttatgaatat gtacttggtg aatgcagttc 1740
ttatacttgt aaaaatgaat atgagcataa agaattagca agaatacatt gtaatgaaga 1800
aaaatgtgta aatgtaaagg tagataacat tgggaataaa aatttggaat tttatctaaa 1860
ataatttaac gaagtgtaat atgtaaaata gtttaatgaa gtataatatt atttaaaata 1920
attcaaaatt tcagaaatta atataattaa ttattataaa tacaataata ttaattacaa 1980
aataacgtat tattagccat ttcagattgt aaatacatat ttttacatat atttttatta 2040
aaactttcaa attaatgttt tcatttttat aagcattatt ataattatat actataatta 2100
tcagtcacat aataatatcc aaagttatcc tctacattat atcaatcata cagtatacaa 2160
ttatataaaa tattaacaac atataacaac caacattaat atatacataa tatctttatt 2220
aatcaatatt taatcaatac aataattaa agttaactaa ctatacacat agtgtatact 2280
aaattattat aaattatatg ttataattac aaaaacgtca tttacttatt ttatttcagt 2340
tatgtttcat agtctaattt agatttggtg aaacgcacat ggctgatgtg ctggtgagca 2400
agcagttcca cgaagcaaac aatatgactg atgcgctggc ggcgctttct gcggcggttg 2460
ccgcacagct gccttgccgt gacgcgctga tgcaggagta cgacgacaag tggcatcaga 2520
acggtctggt gatggataaa tgggtttatcc tgcaagccac cagcccggtg gcgaatgtgc 2580
tggagacggt gcgcggcctg ttgcagcatc gctcatttac catgagcaac ccgaaccgta 2640
ttcggttcgtt gattggcgcg tttgcgggca gcaatccggc agcggtccat gccgaagatg 2700
gcagcggtta cctgttcctg gtggaaatgc ttaccgacct caacagccgt aaccgcaggt 2760
tggcttcacg tctgattgaa ccgctgattc gcctgaaacg ttacgatgcc aaacgtcagg 2820
agaaaatgcg cgcggcgctg gaacagttga aagggtctga aaatctctct ggcgatctgt 2880
acgagaagat aactaaagca ctggcttgat aaataaccga atggcggtca tagcgccgcc 2940
attcggggaa tttaccctg ttttct 2966

```

<210> 104

<211> 1137

<212> DNA

<213> Babesia microti

<400> 104

```

gtttttttcc cctgaggttt tgattgttaa ttaaattgtc aattaattgg attaagaaat 60
gccagcagag catggtggtg aacacctcta attccaggc aggtgaatct ttgagttcaa 120
ggccaacctc atgtacaaac ctagtcccca gtatasccat gmytaamcag ggaaaccgkg 180
tctkgggaaa aamcaaaawt aaamcagaag agaaaggggg aaatgcctgg ggattagtga 240
ggttaatgcc agtgggtggt tttattacca gagacaataa gaccgtgaga gctctgggaa 300
ttttgtttgt ttgttttttg cttttccaag acagggtttc ttggtagctt tggagcctgt 360
cctggaactc aggtataga tcaggctggc ctggaactca cagacatcca cctgcctctg 420
cctcccaaatt gctgggatta aagggtgtgt ctaccaccac ccgggctaga aagaacttgt 480
tagttgggat gtaaatctct ggtcatccct caaaacaaat ttgctagatt gtaaacagga 540
ttgctcatag taaacggttg aagtagaact cgaagtctta tcttgaatcc taacaacaat 600
caaaggatat ttagtggtgt atgaaacggt cctagtgtga acatccatgg actgtggaat 660

```



```

taattgattg ccaaataatta cacaaccaat tgaaaaccct gtagctgggg taactttggt 720
aaagattcca tcagtagaaa aaaccgtaac tagaagaaag accctctgga acttgatcaa 780
caaatcctat ttcgtttatg ttaagattca caatatattgt gacagcaaca tcttgtgtgg 840
tctccagaga cggagaaaatt gttgatgtgg cagctgttgt tgatgtggta gctgttggtg 900
atgtggcagt tgttgttgat gtggcagttg ttgttgatgt ggtagctgtt gttgatgtag 960
cagatgttgt tgatgtagca gatgttggtg atgtagcagc tgttggtgat gtagcagctg 1020
ttgttgattg agcggcgggt gctgctgaag taggtattga atttgctata ctacacttg 1080
tggcatcggt acctgcgcct cctctagtgt ttgttgccaa agtcagagtg agcctgt 1137

```

<210> 105

<211> 1010

<212> DNA

<213> Babesia microti

<400> 105

```

taggaatatg gatttgagct ttgcctatgg tatcatccca taggcatgag tcaggggtcaa 60
aatcgccaga atattccagg cagggttttag taaccctatc catcaatggc gtgttagggg 120
aaaccgaagg tatattatatt gagttttcat ccttagatat acagttttct aaggcataag 180
gggttttccc gccagtgcctt gtagtattgg ttattgacag tagtttttta gttccacttt 240
cattagtgat agctgcggag gctttttgca tagagctggc tagtatagat gaagattttg 300
agtctttgtt tagggggaag tgaatgggtc aattgaagaa ttaataaaa ctattgacgt 360
catgaataac accattgggg accttgggtat tgttattgac agcgggtatta tttcaagcat 420
aaaatcatat atttccacaa tcgccaaagt ttctaaagca ataatccctg gacaaatggc 480
attagttttt actgcattaa tattaattct aaattaaatg aaattcagat gtatatatta 540
ttatatagta caaaatttac acatttatta tatacatgaa cgaacatctt gctcttaaat 600
aaagaaattg agatataaat ggaaataaat taaaagtaac atgagaaaga tgaatataat 660
attaaaaatg taaatttaac tgaaataaaa tgaaataaaa gaatgtattt tataataatt 720
tataataaat tagtatacaa tgattctaca ttataacaag cgagaataaa taattattga 780
ttagtcataa tattatgtat atgttaaggt ttattgttat gtgttgctaa tatgttatat 840
aattgtatac catagtgatt gatataatgt agaggataac tttggatatt atttgatgac 900
tgataattat agtatataat tataataatg kttataaaaa tgacattaat ttgaaagttt 960
aaattaaaat atatgtaaaa atatgtattt aaatctgaaa tggctaataa 1010

```

<210> 106

<211> 1162

<212> DNA

<213> Babesia microti

<400> 106

```

atgtgaatgc attgatcaag gagttgaacg ctcatattaa acagagagca acatctacaa 60
caacaattat tattgaaact aatgctaaag atgtggatga gttagtgaag aaatttgcaa 120
caattgcatac ttttgatgat aagttcaaga acgtattctt tgataattct gttattgatg 180
aaattgtcaa aacgttggaa aagatgaagg ttgagtcaga tactgtatta cctagttgca 240
atggaatcca gaccactgaa aactctagta ctgaccataa tacagtatta tcaaaactta 300
taaagaaaaat taacgactcc ataatcagac ctatgacttc tcggctgata aacaaatcct 360
ttccggagtt gtgcaagttg tttataaaaa tgcccgatgt cgactccaca aatttatggc 420
tttggatgtg gacataagcc amcactcttg taamcagrag agtcagatat tctgatggca 480
gatttaccat tgtaagcact ggggtccaatt ttagatacac attggcmcca actgccgctt 540
ggtcatgatt tgtctctctt ctcccaattg ccaatctcaa tgattacggc acatcgcttc 600
aggagcaggc acttacatct tgcgtcagtc atggtaacga attcagcata gtaagcactg 660
caggcaagac aacttacact acacaatcta agttgttgtc acttttcaag ttatctgcgg 720
agacgttaag ggattttaat gaagctagat ttgcacttgg taacatgact gatagtgcta 780
ataaatctaa agcttttgag gtctacaaat cgacactaac ttactatgaa atcaatatca 840

```



```

gtcgaattgg aaaagatttt tggcatatta aaatcaactc cgaatattac ttttgaatca 900
gttggtttcta aatacaaatt gactgggtgtt aatacagttg atactgccaa tgctgatgtg 960
atcaacgaga caatgtttga cgatttgtcc aaggcaattt cctcatacct atactccctc 1020
atatctataa tttttccgga ggatattaaa ggtcaaggta caagtgaagg tcaacaaaca 1080
agtggagggtc aggatacaaa tgagacaatt ttctcatacc tatactccct catatctata 1140
atttttccgg aggatattaa ag                                     1162

```

```

<210> 107
<211> 984
<212> DNA
<213> Babesia microti

```

```

<400> 107
tgggtgagct agctgttgtc cagccttgggt gtgattggac agtgtagagc tcatctgaag 60
tcttggccttg atagtgaggc tggaccatct cagctagcag ctttgaagct gttctggatg 120
cagaatttttg agggaaactgc aacagagggt ttctgagagg ctggatcaat tgggctactc 180
atctgtattg gtttctgggtc ctttttttct gaaagcacia acttttaaag gtaccatattg 240
tatctgcatt agcacaatgg aatgtgcagt gtgcacagggt caactaaagg ttttttcttc 300
tgtgtatgag caggtaaaag gcacctgtca actttataag tccaaacctt cgaaaatgat 360
ggcactatga catcaaaatt ttattccagg gagtccctag acccaacaac ctacatcgga 420
catgcacctc cagacatatt tacgtcgcca tggatcacga cccacatgca taacaagcgt 480
cttgttgact ttgaagttcc atttgaagca atttttgatg ataaactcat aagttattat 540
accggtacgg atgtcaacgg caagaataag gttcctgcag agcttaccac ggcaatatgc 600
ggcaaagaag acgtgtgtga gcttaacatt accggtttat tgttgaaaga tattagtgtc 660
aagaaaattgg aggagtgtag gaagaagaat gcatctagtg gtactccatc tgggtgtaca 720
ccttctaattg ttccagagga gtgtgtgatt aaaagcaact tacagacgggt tatgaagaag 780
gatgttacta caactttgaa atcggatgat gtcagcaatt acagtgttgt atccattcac 840
ttttacattg ataacgtgtt cagacataat actgcttttg gcagaattaa gattggcaac 900
cttgatctac cagcattttc cattgggttt atccactcga tcttcgtcga gaggggttctc 960
atgggtgaca agagccttgc cagt                                     984

```

```

<210> 108
<211> 537
<212> DNA
<213> Babesia microti

```

```

<400> 108
ttatggaggg ctatttagat ctcgatttga attccaagat tggtaacttt atttcagcca 60
tcgaactcac taacctgacc aacacggtaa aatcagcgag cgtccacctt ccccaactaa 120
aagtgttggc tctgaagttt ggcaacaaga tcgttgatgt cgaggagaca ggcaggacat 180
ttgttacatt tgatgagaag ttgaattcaa tagaaataat taccttcgaa aatgatggca 240
ctatgacatc aaaattttat tccagggagt ccctagactc aacaacctac attggacatg 300
cctctacgta cacacttccc gaagtgttta ccaggtcatt atgtggtaaa gaggacttat 360
gtacgcttga cattacggat ctattgttga aagagattag tgctaagaaa ttggaggagt 420
gtaggaagaa gaatgcattc agtgggtactc catctggtgg tacaccttct aatgttccag 480
aggagtgtgt aattagaacc aacttacaga tggttatgaa gaagaatgct cgtgccg 537

```

```

<210> 109
<211> 2559
<212> DNA
<213> Babesia microti

```


<220>
 <221> misc_feature
 <222> (1)...(2559)
 <223> n=A,T,C or G

<400> 109

```

ttcagaaatt aatataatta attattataa atacaaaata attaattaca aaataacgta 60
ttattagcca tttcagattt aaatacatat ttttacaat attttaattt aaactttcaa 120
attaatgtca tttttataaa cattattata attatatact ataattatca gtcatcaaat 180
aatatccaaa gttatcctct acattatatc aatcactatg gtatacaatt atataacata 240
ttagcaacac ataacaatca accttaacat atacataata ttatgactaa tcaataatta 300
tttattctcg cttgttataa tgtagaatca ttgtatacta atttattata aattattaca 360
aaatacactc ttttatttca ttttatttca gttaaattta atattttaat attatattca 420
tctttctcat gttactttta ttttatttca tttatatctc aatttcttta ttttaagagca 480
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tctgaatttc atttaattta gaattaatat taatgcagta aaaactagtg ccatttgtcc 600
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<210> 110

<211> 3141
 <212> DNA
 <213> Babesia microti

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 <223> n=A,T,C or G

<400> 110

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<210> 111

<211> 1134

<212> DNA

<213> Babesia microti

<400> 111

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<210> 112

<211> 3011

<212> DNA

<213> Babesia microti

<400> 112

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aataatatac tctttcatat tttgtactat tttatataat catatatatt atataattat 360
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<210> 113

<211> 1161

<212> DNA

<213> Babesia microti

<400> 113

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<210> 114

<211> 984

<212> DNA

<213> Babesia microti

<400> 114

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<210> 115

<211> 1205

<212> DNA

<213> Babesia microti

<400> 115

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<210> 116

<211> 1919

<212> DNA

<213> Babesia microti

<400> 116

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<210> 117

<211> 4722

<212> DNA

<213> Babesia microti

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<210> 118

<211> 2215

<212> DNA

<213> Babesia microti

<400> 118

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<210> 119
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<212> DNA
<213> Babesia microti

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<210> 120

<211> 1312

<212> PRT

<213> Babesia microti

<400> 120

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Gln Leu Ile Pro Gln Ser Met Asp Val Ile Thr Arg Thr Val Ser Tyr
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Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr Ser
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Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Ile Ile Pro Gln Asn Arg
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 Thr Gly Cys Phe Gly Glu His Asn Ile Lys Lys Phe Arg Lys Val Gly
 180 185 190
 Ser Thr Tyr Asn Asp Ile Ser Asn Ala Phe Asp Ile Val Pro Trp Ile
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 Pro Ala His Phe Val Val Thr Gln Lys Val Asp Phe Ser Ile Pro Phe
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 705 710 715 720

Asp Ala Thr Val Thr Pro Ser Thr Pro Asn Thr Asn Val Asn Ile Lys
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 Thr Ile Ile Ser Lys Ile Lys Lys Ile Leu Met Ile Ser Glu Thr Ile
 740 745 750
 Ser Ser Thr Ala Leu Ala Arg Leu Ser Ala Val Leu Ser Ile Leu Gly
 755 760 765
 Arg Gly Thr Ser Thr Asn Val Ile Pro Glu Arg Leu Thr Ser Ile Val
 770 775 780
 Val Asp Leu Lys Ser Ala Thr Val Pro Gln Glu Val Ala Leu Lys Asn
 785 790 795 800
 Gly Val Tyr Lys Leu Lys Asp Gln Phe Lys Leu Thr His Lys Met Ile
 805 810 815
 Pro Val Phe Gly Ser Val Gln Leu Gln Ile Pro Glu Lys Ser Thr Val
 820 825 830
 Val Gln Ile Ser Val Val Glu His Glu Asn Asp Thr Lys Met Ala Ile
 835 840 845
 Ile Thr Leu Asp Asp His Ser Lys Leu Thr Leu Glu Arg Val Ile Leu
 850 855 860
 Ser Glu Thr Pro Thr Val Val Gly Leu Thr His Thr Thr Gln Asp Pro
 865 870 875 880
 Leu Asp Val Leu Leu Ser Ile Phe Val Lys Met Asp Asn Thr Thr Asp
 885 890 895
 Asp Gly Val Met Glu Gly Tyr Leu Asp Leu Asp Leu Asn Ser Lys Ile
 900 905 910
 Gly Asn Phe Ile Ser Ala Ile Glu Leu Thr Asp Leu Thr Asn Thr Val
 915 920 925
 Lys Ser Ala Ser Val His Pro Pro Gln Leu Lys Val Leu Ala Leu Lys
 930 935 940
 Phe Gly Asn Lys Ile Val Asp Val Glu Glu Thr Gly Arg Thr Phe Val
 945 950 955 960
 Thr Phe Asp Glu Lys Leu Asn Ser Ile Glu Ile Ile Thr Phe Glu Asn
 965 970 975
 Asp Gly Thr Met Thr Ser Lys Phe Tyr Ser Arg Glu Ser Leu Asp Pro
 980 985 990
 Thr Thr Tyr Ile Gly His Ala Pro Thr Asp Ile Phe Thr Ser Pro Trp
 995 1000 1005

Ile Thr Thr His Met His Asn Lys Arg Leu Val Asp Phe Glu Val Pro
 1010 1015 1020
 Phe Glu Ala Ile Phe Asp Asp Lys Leu Ile Ser Tyr Tyr Thr Gly Thr
 1025 1030 1035 1040
 Asp Val Asn Gly Lys Asn Lys Val Pro Ala Glu Leu Thr Lys Ala Ile
 1045 1050 1055
 Cys Gly Lys Glu Asp Val Cys Glu Leu Asn Ile Thr Gly Leu Leu Leu
 1060 1065 1070
 Lys Asp Ile Ser Ala Lys Lys Leu Glu Glu Cys Arg Lys Lys Asn Ala
 1075 1080 1085
 Ser Ser Gly Thr Pro Ser Gly Gly Thr Pro Ser Asn Val Pro Glu Glu
 1090 1095 1100
 Cys Val Ile Lys Ser Asn Leu Gln Thr Val Met Lys Lys Asp Val Thr
 1105 1110 1115 1120
 Thr Thr Leu Lys Ser Asp Asp Val Ser Asn Tyr Ser Val Val Ser Ile
 1125 1130 1135
 His Phe Tyr Ile Asp Asn Val Phe Arg His Asn Thr Ala Phe Gly Arg
 1140 1145 1150
 Ile Lys Ile Gly Asn Leu Asp Leu Pro Ala Phe Ser Ile Gly Phe Ile
 1155 1160 1165
 His Ser Ile Phe Val Glu Arg Val Leu Met Gly Asp Lys Ser Leu Ala
 1170 1175 1180
 Ser Val Gly Ile Ile Thr Asn Tyr Gly Pro Ser Gly Asp Tyr Glu Leu
 1185 1190 1195 1200
 Leu Arg Tyr Met Gln Val Glu Glu Gly Lys Asn Tyr Phe Lys Leu Val
 1205 1210 1215
 Gln Gly Pro Glu Ile Thr Ala Asp Tyr Ile Gly Ser Gly Leu Thr Lys
 1220 1225 1230
 His Lys Arg Leu Thr Met Asn Gly Ala Ser Thr Gly Ser Ile Gly Phe
 1235 1240 1245
 Glu Thr Asn Tyr Lys Glu Ser Ile Leu Phe Asn Glu Phe Met Arg Pro
 1250 1255 1260
 Thr Asn Lys Ile Val Thr Leu Phe Tyr Thr Asp Ser Glu Thr Val Asn
 1265 1270 1275 1280
 Leu Ile Lys Leu His Ser Leu Glu Asn Val Lys His Gly Val Thr Tyr
 1285 1290 1295

Ser Ile Tyr Gly Ala Phe Pro Ile Glu Glu Ser Ser Pro Glu Ser Ser
 1300 1305 1310

<210> 121

<211> 309

<212> PRT

<213> Babesia microti

<400> 121

Gln Leu Trp Ile Arg Met Lys Ser Val Arg Pro Ile Leu Ile His Phe
 5 10 15

Ile Thr Phe Phe Leu Thr Ser Gly Asn Val Phe Ala Gly Asn Gly Asp
 20 25 30

Val Asn Gln Tyr Ser Ser Asp Phe Gly Arg Ala Leu Asn Asp Leu Met
 35 40 45

Ile Ala Phe Asn Glu Ala Lys Lys Met Tyr Ala Lys Phe Ser Glu Gln
 50 55 60

Ile Thr Asp Thr Met Ile His Thr Cys Lys Asn Ser Ile Asp Ile Leu
 65 70 75 80

Glu Ala Asp Glu Lys Asn Gly Gly His Lys Asn Tyr Leu Glu Lys Lys
 85 90 95

Glu Ile Glu Leu Lys Ser Lys Ile Val Glu Phe Asn Ala Ile Phe Ser
 100 105 110

Asn Ile Asp Leu Asn Asn Ser Thr Val Lys Asn Glu Ile Ile Lys Leu
 115 120 125

Leu Asn Asp Ile Ser Thr Ile Ser Thr Asp Ile Lys Ser Ile Val Asp
 130 135 140

Glu Ile Tyr Tyr Lys Ala Leu Gly Thr Ile Glu Gly Glu Asn Ala Glu
 145 150 155 160

Asn Phe Glu Tyr Glu Ile Lys Lys Lys Lys Ala Glu Leu Leu Arg Asn
 165 170 175

Leu Leu Asn Asp Asn Ile Lys Pro Ile Met Gly Tyr Leu Thr Glu Ile
 180 185 190

Tyr Asn Met His Ile Pro Ile Ile Ser Asn Lys Ser Glu Phe Asn Asp
 195 200 205

Ile Lys Lys Ala Phe Glu Lys His Glu Leu Glu Ala Asn Val Leu Ile
 210 215 220

Ser Lys Ile Leu Glu Asn Asn Gln Asn Phe Gly Thr Asn Phe Asn Asp
 225 230 235 240

Ile Leu Asn Glu Val Asn Gly Ala Ile Glu Glu Phe Asn Lys Thr Ile
 245 250 255

Asp Val Met Asn Asn Thr Ile Gly Asp Leu Gly Ile Val Ile Asp Ser
 260 265 270

Gly Ile Ile Ser Ser Ile Lys Ser Tyr Ile Ser Thr Ile Ala Lys Ile
 275 280 285

Ser Asn Ser Ile Ile Pro Gly Gln Met Ala Leu Val Phe Thr Ala Leu
 290 295 300

Ile Leu Ile Leu Asn
 305

<210> 122

<211> 222

<212> PRT

<213> Babesia microti

<400> 122

Arg Leu Thr Leu Thr Leu Ala Thr Asn Thr Arg Gly Gly Ala Gly Thr
 5 10 15

Asp Ala Thr Ser Val Ser Ile Ala Asn Ser Ile Pro Thr Ser Ala Ala
 20 25 30

Thr Ala Ala Gln Ser Thr Thr Ala Ala Thr Ser Thr Thr Ala Ala Thr
 35 40 45

Ser Thr Thr Ser Ala Thr Ser Thr Thr Ser Ala Thr Ser Thr Thr Ala
 50 55 60

Thr Thr Ser Thr Thr Thr Ala Thr Ser Thr Thr Thr Ala Thr Ser Thr
 65 70 75 80

Thr Ala Thr Thr Ser Thr Thr Ala Ala Thr Ser Thr Ile Ser Pro Ser
 85 90 95

Leu Glu Thr Thr Gln Asp Val Ala Val Thr Asn Ile Val Asn Leu Asn
 100 105 110

Ile Asn Glu Ile Gly Phe Val Asp Gln Val Pro Glu Gly Leu Ser Ser
 115 120 125

Ser Tyr Val Phe Ser Thr Asp Gly Ile Phe Thr Lys Val Thr Pro Ala
 130 135 140

Thr Gly Phe Ser Ile Gly Cys Val Ile Phe Gly Asn Gln Leu Ile Pro
 145 150 155 160

Gln Ser Met Asp Val Ile Thr Arg Thr Val Ser Tyr Thr Thr Lys Tyr
165 170 175

Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr Ser Ser Ser Thr Ser
180 185 190

Thr Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser Ser Lys Phe Val Leu
195 200 205

Arg Asp Asp Pro Glu Phe Thr Ser Gln Leu Thr Ser Ser Phe
210 215 220

<210> 123

<211> 452

<212> PRT

<213> Babesia microti

<400> 123

Ile Ile Met Lys Ile Asn Ile Asp Asn Ile Ile Leu Ile Asn Leu Ile
5 10 15

Ile Leu Leu Asn Arg Asn Val Val Tyr Cys Val Asp Lys Asn Asp Val
20 25 30

Ser Leu Trp Lys Ser Lys Pro Ile Thr Thr Val Ser Thr Thr Asn Asp
35 40 45

Thr Ile Thr Asn Lys Tyr Thr Ser Thr Val Ile Asn Ala Asn Phe Ala
50 55 60

Ser Tyr Arg Glu Phe Glu Asp Arg Glu Pro Leu Thr Ile Gly Phe Glu
65 70 75 80

Tyr Met Ile Asp Lys Ser Gln Gln Asp Lys Leu Ser His Pro Asn Lys
85 90 95

Ile Asp Lys Ile Lys Ile Ser Asp Tyr Ile Ile Glu Phe Asp Asp Asn
100 105 110

Ala Lys Leu Pro Thr Gly Ser Val Asn Asp Ile Ser Ile Ile Thr Cys
115 120 125

Lys His Asn Asn Pro Val Leu Ile Arg Phe Ser Cys Leu Ile Glu Gly
130 135 140

Ser Ile Cys Tyr Tyr Phe Tyr Leu Leu Asn Asn Asp Thr Asn Lys Trp
145 150 155 160

Asn Asn His Lys Leu Lys Tyr Asp Lys Thr Tyr Asn Glu His Thr Asp
165 170 175

Asn Asn Gly Ile Asn Tyr Tyr Lys Ile Asp Tyr Ser Glu Ser Thr Glu

180										185					190						
Pro	Thr	Thr	Glu	Ser	Thr	Thr	Cys	Phe	Cys	Phe	Arg	Lys	Lys	Asn	His						
			195				200					205									
Lys	Ser	Glu	Arg	Lys	Glu	Leu	Glu	Asn	Tyr	Lys	Tyr	Glu	Gly	Thr	Glu						
	210					215					220										
Leu	Ala	Arg	Ile	His	Cys	Asn	Lys	Gly	Lys	Cys	Val	Lys	Leu	Gly	Asp						
225					230					235					240						
Ile	Lys	Ile	Lys	Asp	Lys	Asn	Leu	Glu	Ile	Tyr	Val	Lys	Gln	Leu	Met						
				245					250					255							
Ser	Val	Asn	Thr	Pro	Val	Asn	Phe	Asp	Asn	Pro	Thr	Ser	Ile	Asn	Leu						
			260					265					270								
Pro	Thr	Val	Ser	Thr	Thr	Asn	Asp	Thr	Ile	Thr	Asn	Lys	Tyr	Thr	Gly						
		275					280					285									
Thr	Ile	Ile	Asn	Ala	Asn	Ile	Val	Glu	Tyr	Cys	Glu	Phe	Glu	Asp	Glu						
	290					295					300										
Pro	Leu	Thr	Ile	Gly	Phe	Arg	Tyr	Thr	Ile	Asp	Lys	Ser	Gln	Gln	Asn						
305					310					315					320						
Lys	Leu	Ser	His	Pro	Asn	Lys	Ile	Asp	Lys	Ile	Lys	Phe	Phe	Asp	Tyr						
				325					330					335							
Ile	Ile	Glu	Phe	Asp	Asp	Asp	Val	Lys	Leu	Pro	Thr	Ile	Gly	Thr	Val						
			340					345					350								
Asn	Ile	Ile	Tyr	Ile	Tyr	Thr	Cys	Glu	His	Asn	Asn	Pro	Val	Leu	Val						
	355						360					365									
Glu	Phe	Ile	Val	Ser	Ile	Glu	Glu	Ser	Tyr	Tyr	Phe	Tyr	Phe	Tyr	Ser						
	370					375					380										
Met	Asn	Asn	Asp	Thr	Asn	Lys	Trp	Asn	Asn	His	Lys	Ile	Lys	Tyr	Asp						
385					390					395				400							
Lys	Arg	Phe	Asn	Lys	His	Thr	Asp	Met	Asn	Gly	Ile	Asn	Cys	Tyr	Glu						
			405						410					415							
Tyr	Val	Leu	Arg	Lys	Cys	Ser	Ser	Tyr	Thr	Arg	Lys	Asn	Glu	Tyr	Glu						
		420						425					430								
His	Lys	Glu	Leu	Ala	Arg	Ile	His	Cys	Asn	Glu	Glu	Lys	Cys	Val	Asn						
	435						440					445									
Val	Lys	Val	Arg																		
	450																				

<210> 124
 <211> 732
 <212> PRT
 <213> Babesia microti

<400> 124

Val Pro Thr Leu Ser Ser Leu Val Lys Leu Phe Ser Glu Val Met Leu
 5 10 15

Arg Val Lys Asp Ala Ser Ser Thr Glu Ala Thr Ile Arg Met Phe Leu
 20 25 30

Arg Phe Asn Ala Phe Ile Lys Phe Leu Asn Glu Glu Lys Ser Arg Gly
 35 40 45

Asp Lys Ser Ala Leu Asn Asp Glu Gly Leu Met Arg Phe Ile Ser Met
 50 55 60

Thr Ser Gly Phe Ile Asp Asp Leu Glu Leu Val Leu Asp Glu Leu Ser
 65 70 75 80

Lys His Ser Leu Leu Ile Asn Asn Glu Gly Ala Lys Ser Met Leu Ser
 85 90 95

Ser Leu Ile Leu Ser Phe Arg Tyr Ile Asn His Ile Arg Asn Leu Ile
 100 105 110

Asn Gly Ile Tyr Leu Gly Leu Asn Asn Pro Ser Ser Ser Ile Gly Glu
 115 120 125

Thr Ala Gln Glu Thr Thr Glu Pro Ser Thr Pro Thr Pro Thr Pro Ser
 130 135 140

Thr Gln Thr Ile Leu Lys Pro Lys Gly Ser Glu Ile Arg Gly Tyr Ile
 145 150 155 160

Ile Lys Val Asp Gln Thr Ala Asn Leu Ile Thr Phe Ile Asp Ala Leu
 165 170 175

Ile Lys Glu Leu Asn Val His Ile Lys Gln Thr Thr Thr Ser Ser Val
 180 185 190

Val Gly Thr Lys Glu Thr Asn Gly Thr Thr Ser Gly Ser Pro Glu Ser
 195 200 205

Asn Pro Gly Ser Thr Asp Ser Gly Ser Ile Gln Ala Glu Val Ala Glu
 210 215 220

Leu Leu Lys Lys Phe Ala Thr Ile Ala Ser Phe Asp Glu Lys Phe Thr
 225 230 235 240

Asn Leu His Ile Asn Lys Pro Phe Ala Asp Ala Leu Ile Lys Arg Leu
 245 250 255

Asn Glu Ile Lys Ala Glu Leu Ser Ser Asn Ser Gly Thr Pro Pro Lys
 260 265 270
 Leu Pro Asp Ile Ser Cys Leu Arg Leu Ser Glu Ile Val Gln Lys Leu
 275 280 285
 Asn Arg Leu Ile Lys Phe Asn Thr Ser Arg Leu Ile Asn Lys Ser Phe
 290 295 300
 Pro Glu Leu Cys Lys Leu Phe Ile Lys Met Pro Asp Val Asp Ser Asn
 305 310 315 320
 Lys Phe Met Ala Leu Asp Val Asp Ile Ser Asn Thr Leu Val Asn Arg
 325 330 335
 Arg Val Arg Tyr Ser Asp Gly Arg Phe Thr Ile Val Ser Thr Gly Ser
 340 345 350
 Asn Phe Arg Tyr Thr Leu Ala Pro Thr Ala Ala Gly His Asp Leu Ser
 355 360 365
 Leu Phe Ser Gln Leu Pro Ile Ser Met Ile Thr Val Thr Ser Pro Gln
 370 375 380
 Glu Gln Ala Leu Thr Ser Cys Val Ser His Gly Asn Glu Phe Ser Ile
 385 390 395 400
 Val Ser Thr Ala Gly Lys Thr Thr Tyr Thr Thr Gln Ser Lys Leu Leu
 405 410 415
 Ser Leu Phe Lys Leu Ser Ala Glu Thr Leu Arg Asp Phe Asn Glu Ala
 420 425 430
 Arg Phe Ala Leu Gly Asn Met Thr Asp Ser Ala Asn Lys Ser Lys Ala
 435 440 445
 Leu Glu Val Tyr Lys Ser Thr Leu Thr Thr Met Lys Ser Ile Ser Val
 450 455 460
 Glu Leu Glu Lys Ile Phe Gly Ile Leu Lys Ser Thr Pro Asn Ile Thr
 465 470 475 480
 Phe Glu Ser Val Val Ser Lys Tyr Lys Leu Thr Gly Val Asn Thr Val
 485 490 495
 Asp Thr Ala Asn Ala Asp Val Ile Asn Glu Thr Met Phe Asp Asp Leu
 500 505 510
 Ser Lys Ala Ile Ser Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe
 515 520 525
 Pro Glu Asp Ile Lys Gly Gln Gly Thr Ser Glu Gly Gln Gln Thr Ser
 530 535 540

Glu Gly Gln Gln Thr Ser Glu Gly Gln Gln Thr Ser Gly Asp Gln Asp
545 550 555 560

Thr Ser Gly Gly Gln Asp Thr Asn Glu Thr Ile Phe Ser Tyr Leu Tyr
565 570 575

Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Gln Gly Thr
580 585 590

Ser Ala Gln Leu Leu Glu Tyr Arg Thr Gln Leu Ala Ser Leu Ser Lys
595 600 605

Ile Lys Ser Leu Arg Lys Lys Ile Lys Arg Arg Leu His Ser Tyr
610 615 620

Pro Thr Phe Cys Ser Leu Ser Tyr Val Pro Ser Thr Ser Val Ser
625 630 635

Phe Cys Arg Asn Glu Phe Leu Leu Asn Met Val Ser Phe Ser Gln Ser
640 645 650

Leu Phe Ile Leu Phe Pro Leu Leu Phe Ser Cys Trp Thr Glu Val
655 660 665

Leu Met Gly Asn Tyr Ile Tyr Pro His Tyr Phe Ser Pro Ser Ile Leu
670 675 680 685

Met Leu Tyr Thr Leu Phe Ile Thr Pro Arg Val Ser Pro Pro Cys Leu
690 695 700

Ser Pro Phe Leu Pro Thr Ser Pro Gln Pro Thr Thr His Gly Val
705 710 715

Asn Thr Pro Gln Lys Cys Cys Leu Pro Gly Thr Leu Ser Gly
720 725 730

Lys Ala

<210> 125

<211> 334

<212> PRT

<213> Babesia microti

<400> 125

Leu Ser Asn Ser Ser Ile Arg Gly Arg Val Trp Leu Ile Phe Pro Arg
5 10 15

Tyr Leu Leu Lys Asp Tyr Lys Met Ile Leu Val Cys Ile Cys Phe Val
20 25 30

Asn Ile Glu Asp Leu Gly Thr Gln Lys Asn Lys Ser Ser Pro Leu Gly
35 40 45

Lys Ile Gly Thr Ser Met Asp Asp Ile Ile Ala Met Phe Ser Asn Pro
 50 55 60
 Asn Met Tyr Leu Val Lys Val Ala Tyr Leu Gln Ala Ile Glu His Ile
 65 70 75 80
 Phe Leu Ile Ser Thr Lys Tyr Asn Asp Ile Phe Asp Tyr Thr Ile Asp
 85 90 95
 Phe Ser Lys Arg Glu Ala Thr Asp Ser Gly Ser Phe Thr Asp Ile Leu
 100 105 110
 Leu Gly Asn Lys Val Lys Glu Ser Leu Ser Phe Ile Glu Gly Leu Ile
 115 120 125
 Ser Asp Ile Lys Ser His Ser Leu Lys Ala Gly Val Thr Gly Gly Ile
 130 135 140
 Ser Ser Ser Ser Leu Phe Asp Glu Ile Phe Asp Glu Leu Asn Leu Asp
 145 150 155 160
 Gln Ala Thr Ile Arg Thr Leu Val Ala Pro Leu Glu Glu Ile Lys Asn
 165 170 175
 Glu Leu Lys Thr Ile Ser Ser Gln Lys Ile Ala Asp Ala Thr Val Thr
 180 185 190
 Pro Ser Thr Pro Asn Thr Asn Val Asn Ile Lys Thr Ile Ile Ser Lys
 195 200 205
 Ile Lys Lys Ile Leu Met Ile Ser Glu Thr Ile Ser Ser Thr Ala Leu
 210 215 220
 Ala Arg Leu Ser Ala Val Leu Ser Ile Leu Gly Arg Gly Thr Ser Thr
 225 230 235 240
 Asn Val Ile Pro Glu Arg Leu Thr Ser Ile Val Val Asp Leu Lys Ser
 245 250 255
 Ala Thr Val Pro Gln Glu Val Ala Leu Lys Asn Gly Val Tyr Lys Leu
 260 265 270
 Lys Asp Gln Phe Lys Leu Thr His Lys Met Ile Pro Val Phe Gly Ser
 275 280 285
 Val Gln Leu Gln Ile Pro Glu Lys Ser Thr Val Val Gln Ile Ser Val
 290 295 300
 Val Glu His Glu Asn Asp Thr Lys Met Ala Ile Ile Thr Leu Asp Asp
 305 310 315 320
 His Ser Lys Leu Thr Leu Glu Arg Val Ile Leu Ser Glu Thr
 325 330

<210> 126
 <211> 268
 <212> PRT
 <213> Babesia microti

<400> 126

Lys Tyr Lys Tyr Ala Leu Glu Ser Gly Glu Pro Arg Arg Val Glu Met
 5 10 15

Gly Ser Arg Phe Ser Glu Met Gly Ser Arg Phe Ser Val Ser Pro Trp
 20 25 30

Ala Trp Leu Glu Cys Pro Ser Cys Leu Pro Ser Pro Leu Phe Gln Val
 35 40 45

Thr Met Ser Pro Ser Gln Ser Pro Arg Trp Ser Ser Cys Pro Pro Leu
 50 55 60

Ser Ser Trp Leu Leu Pro His Pro Arg His Ile Pro Ile Lys Asp Cys
 65 70 75 80

Arg Leu Ser Tyr Cys Tyr Pro Cys Arg Val Leu Met Pro Leu Arg Pro
 85 90 95

Gly Thr Ser Ser Ala Ser Val Pro Ser Arg Pro His Ser Ala Pro Pro
 100 105 110

His Val Ala Gly Pro Pro Ser Ala Pro Arg Asp Leu Gln Tyr Ser Leu
 115 120 125

Ser Arg Ser Pro Leu Ala Leu Arg Leu Arg Trp Leu Pro Pro Ala Asp
 130 135 140

Ser Gly Gly Arg Ser Asp Val Thr Tyr Ser Leu Leu Cys Leu Leu Cys
 145 150 155 160

Gly Arg Asp Gly Pro Ala Gly Ala Cys Gln Pro Cys Gly Pro Arg Val
 165 170 175

Ala Phe Val Pro Arg Gln Ala Gly Leu Arg Glu Arg Ala Ala Thr Leu
 180 185 190

Leu His Leu Arg Pro Gly Ala Arg Tyr Thr Val Arg Val Ala Ala Leu
 195 200 205

Asn Gly Val Ser Gly Pro Ala Ala Ala Ala Glu Ala Thr Tyr Ala Gln
 210 215 220

Val Thr Val Ser Thr Gly Pro Gly Gly Glu Ala Thr Arg Pro Ser Gly
 225 230 235 240

Val Arg Pro Pro Pro Gln Pro Gln Phe Pro Leu Cys Ile Pro Ser His

245

250

255

Ser Gly Thr His Val Thr Thr Pro His Ala Pro Gly
 260 265

<210> 127

<211> 386

<212> PRT

<213> Babesia microti

<400> 127

Val Asn Ala Leu Ile Lys Glu Leu Asn Ala His Ile Lys Gln Arg Ala
 5 10 15

Thr Ser Thr Thr Thr Ile Ile Ile Glu Thr Asn Ala Lys Asp Val Asp
 20 25 30

Glu Leu Val Lys Lys Phe Ala Thr Ile Ala Ser Phe Asp Asp Lys Phe
 35 40 45

Lys Asn Val Phe Phe Asp Asn Ser Val Ile Asp Glu Ile Val Lys Thr
 50 55 60

Leu Glu Lys Met Lys Val Glu Ser Asp Thr Val Leu Pro Ser Cys Asn
 65 70 75 80

Gly Ile Gln Thr Thr Glu Asn Ser Ser Thr Asp Pro Tyr Thr Val Leu
 85 90 95

Ser Lys Leu Ile Lys Lys Ile Asn Asp Ser Ile Ile Arg Pro Met Thr
 100 105 110

Ser Arg Leu Ile Asn Lys Ser Phe Pro Glu Leu Cys Lys Leu Phe Ile
 115 120 125

Lys Met Pro Asp Val Asp Ser Asn Lys Phe Met Ala Leu Asp Val Asp
 130 135 140

Ile Ser Asn Thr Leu Val Asn Arg Arg Val Arg Tyr Ser Asp Gly Arg
 145 150 155 160

Phe Thr Ile Val Ser Thr Gly Ser Asn Phe Arg Tyr Thr Leu Ala Pro
 165 170 175

Thr Ala Ala Gly His Asp Leu Ser Leu Phe Ser Gln Leu Pro Ile Ser
 180 185 190

Met Ile Thr Val Thr Ser Pro Gln Glu Gln Ala Leu Thr Ser Cys Val
 195 200 205

Ser His Gly Asn Glu Phe Ser Ile Val Ser Thr Ala Gly Lys Thr Thr
 210 215 220

Tyr Thr Thr Gln Ser Lys Leu Leu Ser Leu Phe Lys Leu Ser Ala Glu
225 230 235 240

Thr Leu Arg Asp Phe Asn Glu Ala Arg Phe Ala Leu Gly Asn Met Thr
245 250 255

Asp Ser Ala Asn Lys Ser Lys Ala Leu Glu Val Tyr Lys Ser Thr Leu
260 265 270

Thr Thr Met Lys Ser Ile Ser Val Glu Leu Glu Lys Ile Phe Gly Ile
275 280 285

Leu Lys Ser Thr Pro Asn Ile Thr Phe Glu Ser Val Val Ser Lys Tyr
290 295 300

Lys Leu Thr Gly Val Asn Thr Val Asp Thr Ala Asn Ala Asp Val Ile
305 310 315 320

Asn Glu Thr Met Phe Asp Asp Leu Ser Lys Ala Ile Ser Ser Tyr Leu
325 330 335

Tyr Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Gln Gly
340 345 350

Thr Ser Glu Gly Gln Gln Thr Ser Gly Gly Gln Asp Thr Asn Glu Thr
355 360 365

Ile Phe Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp
370 375 380

Ile Lys
385

<210> 128

<211> 1371

<212> DNA

<213> Babesia microti

<400> 128

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acataacact agggacttgg cattgcatat ctgtaaataat aattgaaacc aaaataaaat 60
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gctggttttg aggttctatt aggggagtg cgtacttgta taccttggac tgaagaccag 180
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cacatggagt gttgaggag gaaagagatc cccctaagcc agatagatca actaaatgaa 300
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<210> 129
<211> 2417
<212> DNA
<213> Babesia microti
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<400> 129						
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ctcctcttat	ttctgccagt	attataat	caggaaggaa	catgcatcat	aaattacatg	240
taactttcat	gttgccagtga	tgctgttttc	tatttttgat	ctcatttgac	agcagtaaag	300
tcatacaaaa	aataataaat	acctctcatg	gagcttgcca	tttcctctgc	atcttttttg	360
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gaacccagcc	atcaattgca	gccacaatgg	gtgctgaatc	caacttcttg	atttgttttt	480
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gatcagcctc	tttaaagtcc	tgttagcagt	actcccatgc	cacaatgaac	tgtagccaat	780
ttcatcatac	tgtcctagct	tcctttctct	ctttataata	ctttgtactg	atgtgaccaa	840
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tattttaacaa	gttaattgcca	tctactcgg	tccttcatac	gttcatcatg	gtgggtggaa	960
tgagaaggac	cccaatgggc	catgaggcag	ggaatttatt	gggcacagca	aggggagtgt	1020
ctaggggtcat	tgttagctga	ctcagagtgc	agtgttttgc	ctcgaatcct	gagcgcattt	1080
attcggctct	taaggtagcc	aaccatgcct	ggggggactg	tcctgttcca	atagcagtaa	1140
aggccgaaca	atcatggctg	cattgtgact	ttgtgtgact	ctaactttac	atagaagagt	1200
aattcagagc	ccogtgttgc	tcttctggcc	cctgcgtgtg	ggaggggtgc	gacgtgatcc	1260
agagccatga	gacacccgtg	ccatcatcgg	tcacctcccg	cgccacgcct	tcttcatgcc	1320
tcgcttatgg	ttctcctgtg	tggtcgcaaa	cgtttgaaaa	cacgagcaac	aagcaacacc	1380
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cccagagggt	aagagtactg	gctgctcttc	cagaggctct	gagttcaatt	cccagcacc	1500
acagggtggc	tcacaaccat	ctgtaatgag	atcgtctgcc	ctcttctggc	ccgcaggcag	1560
aacactgtat	atataataag	taaataaatc	tctttttaaa	aaagagtgag	gtactgaagc	1620
aaccccatac	caccgtgtgt	caatatgtga	tttaaaaaaa	aagaattaac	taagtgcagg	1680
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gttgaccgtt	agagaaattg	ctttctatta	atttttaatt	taaggagat	tgactacatc	1920
aatgaattaa	gaactgatac	atcaatat	aattctggaa	gatgaactgg	ggagaatgct	1980
ccatgtggaa	attgttcacc	atataacct	ggggatatgg	gctcagcctc	agtactcttg	2040
tagcaaatc	gacacagcag	cacaccttga	gcccttgcac	aggacatgca	aagacagaat	2100
gtgataacca	gtggcttttg	ggccagccaa	gtctacccca	ttaaagggaag	actaacagtc	2160
ggtaaccagg	aactcagggt	cagtaacctgc	ctgtggcttt	ataaaactta	cttctagttt	2220
agatttccat	tttatgtttc	attattccag	atattctgtt	tttgatctat	ctgcttatga	2280


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tttatatttc ctaaattctc aacttgtaaa tggcattaga aggatggaat tgtacagttt 2340
cactttgtaa ttgttaagtc ctatgctgtg tttttgcatg tttttgaagt gttttcagta 2400
agtatttact tatttat 2417

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<210> 130
<211> 1333
<212> DNA
<213> Babesia microti

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<400> 130
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acacaaatac acacacacac acacacacac acacacctat gtatgcacat gcaacccac 180
acacatacaa aaaaaaaga acctctactc tttacagca ataaaaaatg aactaggtga 240
aaagaaaacc aaccttgctt catcatttag tcatagaaaa tgatactgtg gttgtcattt 300
actatcatta acctaaaata aatgtgtccc tacctaaggg tataaactgt tatctggcct 360
tgtacagatt ttggatcttg aattctttta gtgggttgcc caatagcatt ttaaggtccc 420
agaataaata gacaggatga aatgggatgg gctagagtag aatggaggct aatatcagaa 480
caaatacagac agtgaggata tacttggtt tacaagaatc ctatttacac acacatgcac 540
atgtactgtc agtatgtact gctacatcaa caacatctgc tacatcaaca acagctacca 600
catcaacaac aactgccaca tcaacaacaa ctgccacatc aacaacagct accacatcaa 660
caacagctgc cacatcaaca atttctccgt ctctggagac cacacaagat gttgctgtca 720
caaataattgt gaatcttaac ataaacgaaa taggatttgt tgatcaagtt ccagaggggtc 780
tttcttctag ttacgttttt tctactgatg gaatctttac caaagttacc ccagctacag 840
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agacttcgag ttctacttca accgtttact atgagcaatc tggtttaca tctagcaaat 1020
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aaatatcatt aagtgatggg agcatgttgt acaccaataa tccagattcc aaaatttaca 1200
tcagcgaagt taaggttggg gagataacaa taccaataaa tataacatca caatatacac 1260
tgatcaaat atcatttaat ggtgaattgg ttgagttgta tactacagga tgtttcgggtg 1320
aacataatat taa 1333

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<210> 131
<211> 537
<212> DNA
<213> Babesia microti

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<400> 131
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tcgaactcac taacctgacc aacacggtaa aatcagcgag cgtccaccct cccaactaa 120
aagtgttggc tctgaagttt ggcaacaaga tcgttgatgt cgaggagaca ggcaggacat 180
ttgttacatt tgatgagaag ttgaattcaa tagaaataat taccttcgaa aatgatggca 240
ctatgacatc aaaaatttat tccagggagt ccctagactc aacaacctac attggacatg 300
cctctacgta cacacttccc gaagtgttta ccagggtcatt atgtggtaaa gaggacttat 360
gtacgcttga cattacggat ctattgttga aagagattag tgctaagaaa ttggaggagt 420
gtaggaagaa gaatgcatct agtgggtact catctggtgg tacaccttct aatgttccag 480
aggagtgtgt aattagaacc aacttacaga tggttatgaa gaagaatgct cgtgccg 537

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<210> 132
<211> 178
<212> PRT
<213> Babesia microti

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Val Cys Thr Ala Thr Ser Thr Thr Ser Ala Thr Ser Thr Thr Ala Thr
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Thr Ser Thr Thr Thr Ala Thr Ser Thr Thr Thr Ala Thr Ser Thr Thr
50 55 60

Ala Thr Thr Ser Thr Thr Ala Ala Thr Ser Thr Ile Ser Pro Ser Leu
65 70 75 80

Glu Thr Thr Gln Asp Val Ala Val Thr Asn Ile Val Asn Leu Asn Ile
85 90 95

Asn Glu Ile Gly Phe Val Asp Gln Val Pro Glu Gly Leu Ser Ser Ser
100 105 110

Tyr Val Phe Ser Thr Asp Gly Ile Phe Thr Lys Val Thr Pro Ala Thr
115 120 125

Gly Phe Ser Ile Gly Cys Val Ile Phe Gly Asn Gln Leu Ile Pro Gln
130 135 140

Ser Met Asp Val Ile Thr Arg Thr Val Ser Tyr Thr Thr Lys Tyr Pro
145 150 155 160

Leu Ile Val Val Arg Ile Gln Asp Lys Thr Ser Ser Ser Thr Ser Thr
165 170 175

Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser Ser Lys Phe Val Leu Arg
180 185 190

Asp Asp Pro Glu Phe Ile Ile Pro Gln Asn Arg Ser Ser Thr Tyr Thr
195 200 205

Val Asn Asp Ile Thr Tyr Lys Ser Phe Asp Ile Ser Ser Ala Asp Asp
210 215 220

Asn Glu Phe Leu Lys Ile Ser Leu Ser Asp Gly Ser Met Leu Tyr Thr
225 230 235 240

Asn Asn Pro Asp Ser Lys Ile Tyr Ile Ser Glu Val Lys Val Gly Glu
245 250 255

Ile Thr Ile Pro Ile Asn Ile Thr Ser Gln Tyr Thr Leu Ile Lys Leu
260 265 270

Ser Phe Asn Gly Glu Leu Val Glu Leu Tyr Thr Thr Gly Cys Phe Gly
275 280 285

Glu His Asn Ile
290

<210> 134

<211> 215

<212> PRT

<213> Babesia microti

<400> 134

Val Gln Thr Phe Glu Asn Asp Gly Thr Met Thr Ser Lys Phe Tyr Ser
 5 10 15

Arg Glu Ser Leu Asp Pro Thr Thr Tyr Ile Gly His Ala Pro Thr Asp
 20 25 30

Ile Phe Thr Ser Pro Trp Ile Thr Thr His Met His Asn Lys Arg Leu
 35 40 45

Val Asp Phe Glu Val Pro Phe Glu Ala Ile Phe Asp Asp Lys Leu Ile
 50 55 60

Ser Tyr Tyr Thr Gly Thr Asp Val Asn Gly Lys Asn Lys Val Pro Ala
 65 70 75 80

Glu Leu Thr Lys Ala Ile Cys Gly Lys Glu Asp Val Cys Glu Leu Asn
 85 90 95

Ile Thr Gly Leu Leu Leu Lys Asp Ile Ser Ala Lys Lys Leu Glu Glu
 100 105 110

Cys Arg Lys Lys Asn Ala Ser Ser Gly Thr Pro Ser Gly Gly Thr Pro
 115 120 125

Ser Asn Val Pro Glu Glu Cys Val Ile Lys Ser Asn Leu Gln Thr Val
 130 135 140

Met Lys Lys Asp Val Thr Thr Thr Leu Lys Ser Asp Asp Val Ser Asn
 145 150 155 160

Tyr Ser Val Val Ser Ile His Phe Tyr Ile Asp Asn Val Phe Arg His
 165 170 175

Asn Thr Ala Phe Gly Arg Ile Lys Ile Gly Asn Leu Asp Leu Pro Ala
 180 185 190

Phe Ser Ile Gly Phe Ile His Ser Ile Phe Val Glu Arg Val Leu Met
 195 200 205

Gly Asp Lys Ser Leu Ala Ser
 210 215

<210> 135

<211> 2560

<212> DNA

<213> Babesia microti

<400> 135

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 cgctattatt tctacaaatt gaaggataat aatgaatgga aaaatgaaaa attagaatgt 120
 accagtatta gtcacaaagt tgacgataat cgtattgaat attatgaaac cttttgtgat 180


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ggtgcctttc ccccttataa tacagaatat ggtaaacaaa aatgtagtga gcaaaaatga 240
gtaaaagtgt atagtattaa ggataagaat ttggaaattt atgtaaaata atttaatgaa 300
gtataatatt atttaaaata attcgaaatt taagaaatta atataattaa ttattataaa 360
aataaagtta tttatatcta aattttataat aatcaaattg ttatttaaca tatggatcta 420
tattgtgtga tgaacaatg gattattaag ggaatcatac cattgtcagt taaaagtgat 480
attggtaaca atattacaaa tataatccaat gatactttta tattaataag catctatact 540
tgcaatcatt ataaactgga gatacgttta tattaacatt gtattaggaa taaggataaa 600
cacaaatgat atgccataat aaaagtaaag tcaaatgact agtatattat acaacgataa 660
agtaataata taaaatatac taatatatct atgttatata aaatatgtct atactatagt 720
atttatttat gtgatatagt catatatttg tagaaataat tagtattatt tatgttatca 780
tacaatattt atcattatca aatcttactg ttatattatt attattatag agcaattttt 840
atacaatata caataaaaatt aagcgataaa ccataaacat cacgtatgca ggcaaatataa 900
gacaaaatta tttgacccca tataataaat taactatggt attacataat aatcaacaag 960
aatataacgt ctatcaattt ataacttgaa cttatattta ttatctgaag attaattcaa 1020
agtatttcat tattacaacg ttattataac tataataaac atatatatta atcaataaca 1080
attgtggata aggatgaagt cagttagacc aatactaatt cattttatta cattcttttt 1140
aacaagtgga aatgtctttg caggaaatgg tgatgttaat caatattcaa gtgatttttg 1200
acgagcatta aacgatctta tgatcgcttt taacgaggct aaaaaaatgt atgcaaaatt 1260
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aattgttgat gaaatatact ataaggctct tggtaacaatt gaaggtgaaa atgctgaaaa 1560
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caccattggg gaccttggtt ttgttattga cagcgggtatt atttcaagca taaaatcaca 1920
tatttccaca atcgccaaga tttctaaagc aataatccct ggacaaatgg cattagtttt 1980
tactgcatta atattaattc taaattaaat gaaattcaga tgtatatatt attatatagt 2040
acaaaattta cacatttatt atatacatga acgaacatct tgctctttaa taaagaaatt 2100
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agtatataat tataataatg tttataaaaa tgacattaat ttgaaagttt aaattaaaaa 2460
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<210> 136

<211> 309

<212> PRT

<213> Babesia microti

<400> 136

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20 25 30

Val Asn Gln Tyr Ser Ser Asp Phe Gly Arg Ala Leu Asn Asp Leu Met

35	40	45
Ile Ala Phe Asn Glu Ala Lys Lys Met Tyr Ala Lys Phe Ser Glu Gln 50 55 60		
Ile Thr Asp Thr Met Phe His Thr Tyr Lys Asn Ser Ile Asp Ile Leu 65 70 75 80		
Lys Ala Asp Glu Lys Asn Gly Gly His Lys Asn Tyr Leu Glu Lys Lys 85 90 95		
Glu Ile Glu Leu Lys Ser Lys Thr Val Glu Phe Asp Val Ile Phe Ser 100 105 110		
Asn Ile Asp Leu Asn Asn Ser Thr Val Lys Asn Glu Ile Ile Lys Leu 115 120 125		
Leu Asn Asp Ile Ser Thr Ile Ser Thr Asp Ile Lys Ser Ile Val Asp 130 135 140		
Glu Ile Tyr Tyr Lys Ala Leu Gly Thr Ile Glu Gly Glu Asn Ala Glu 145 150 155 160		
Asn Phe Glu Tyr Glu Ile Lys Lys Lys Lys Ala Glu Leu Leu Arg Asn 165 170 175		
Leu Leu Asn Asp Asn Ile Lys Pro Ile Met Gly Tyr Leu Thr Glu Ile 180 185 190		
Tyr Asn Met His Ile Pro Ile Ile Ser Asn Lys Ser Glu Phe Asn Asp 195 200 205		
Ile Lys Lys Ala Phe Glu Lys His Glu Leu Glu Ala Asn Val Leu Ile 210 215 220		
Ser Lys Ile Leu Glu Asn Asn Gln Asn Phe Gly Thr Asn Phe Asn Asp 225 230 235 240		
Ile Leu Asn Glu Val Asn Gly Ala Ile Glu Glu Phe Asn Lys Thr Ile 245 250 255		
Asp Val Met Asn Asn Thr Ile Gly Asp Leu Gly Ile Val Ile Asp Ser 260 265 270		
Gly Ile Ile Ser Ser Ile Lys Ser His Ile Ser Thr Ile Ala Lys Ile 275 280 285		
Ser Lys Ala Ile Ile Pro Gly Gln Met Ala Leu Val Phe Thr Ala Leu 290 295 300		
Ile Leu Ile Leu Asn 305		

<210> 137
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 137
 gatcctctgg tggctccggt tcta 24

<210> 138
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 138
 agcttagaac cggagccacc agag 24

<210> 139
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 139
 attccagaac ccaatgcgga ttcagaatc 29

<210> 140
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 140
 cttgaattca tagaatccca ggaaagcctt aaacatg 37

<210> 141
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 141
 ccgccgtaga attctcaatt tacaataaat g 31

<210> 142
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 142
 ggttctaagc ttacagatga tattaagaag gc

32

<210> 143
 <211> 2034
 <212> DNA
 <213> Babesia

<400> 143
 atgcagcatc accaccatca ccacattcca gaacccaatg cggattcaga atctgtacat 60
 gttgaaatcc aggaacatga taacatcaat ccacaagacg cttgcatag tgagccgctc 120
 gaacaaatgg attctgatac caggggtgtg cccgaaagtt tggatgaggg ggtaccacac 180
 caattctcta gattagggca ccactcagac atggcatctg atataaatga tgaagaacca 240
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 cattcaatag atgatgaaga gcttgacaac ttaatgagac taacggcgca agaaacaagt 360
 gacgatcatg aagaaggga tggcaaaactc aatacgaata aaagtgagaa gactgaaaga 420
 aaatcgcatg atactcagac accgcaagaa atatatgaag agcttgacaa cttactgaga 480
 ctaacggcac aagaaatata tgaagagcgt aaagaagggc atggcaaacc caatacgaat 540
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 gaaacaagtg acgctcatga agaagggcag gacaaaatca atacgaataa aagtgagaag 840
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 gaaggtgctg gtagtgataa agctggaact ggaactagtg gaactactac gtctagtgga 1920
 actgggtgctg gtggagctgg tagtggtgga ctagtgggac atgcttctaa tgcaaaaatt 1980
 cctggaataa tgacactaac tctatttgca ttattaacat ttattgtaaa ttga 2034

<210> 144
 <211> 677
 <212> PRT
 <213> Babesia

<400> 144

Met	Gln	His	His	His	His	His	His	Ile	Pro	Glu	Pro	Asn	Ala	Asp	Ser
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Glu	Ser	Val	His	Val	Glu	Ile	Gln	Glu	His	Asp	Asn	Ile	Asn	Pro	Gln
			20					25					30		
Asp	Ala	Cys	Asp	Ser	Glu	Pro	Leu	Glu	Gln	Met	Asp	Ser	Asp	Thr	Arg
		35					40					45			
Val	Leu	Pro	Glu	Ser	Leu	Asp	Glu	Gly	Val	Pro	His	Gln	Phe	Ser	Arg
	50					55					60				
Leu	Gly	His	His	Ser	Asp	Met	Ala	Ser	Asp	Ile	Asn	Asp	Glu	Glu	Pro
	65				70					75					80
Ser	Phe	Lys	Ile	Gly	Glu	Asn	Asp	Ile	Ile	Gln	Pro	Pro	Trp	Glu	Asp
				85					90					95	
Thr	Ala	Pro	Tyr	His	Ser	Ile	Asp	Asp	Glu	Glu	Leu	Asp	Asn	Leu	Met
			100					105					110		
Arg	Leu	Thr	Ala	Gln	Glu	Thr	Ser	Asp	Asp	His	Glu	Glu	Gly	Asn	Gly
		115					120					125			
Lys	Leu	Asn	Thr	Asn	Lys	Ser	Glu	Lys	Thr	Glu	Arg	Lys	Ser	His	Asp
	130					135					140				
Thr	Gln	Thr	Pro	Gln	Glu	Ile	Tyr	Glu	Glu	Leu	Asp	Asn	Leu	Leu	Arg
	145				150					155					160
Leu	Thr	Ala	Gln	Glu	Ile	Tyr	Glu	Glu	Arg	Lys	Glu	Gly	His	Gly	Lys
			165						170					175	
Pro	Asn	Thr	Asn	Lys	Ser	Glu	Lys	Ala	Glu	Arg	Lys	Ser	His	Asp	Thr
			180					185					190		
Gln	Thr	Thr	Gln	Glu	Ile	Cys	Glu	Glu	Cys	Glu	Glu	Gly	His	Asp	Lys
			195				200					205			
Ile	Asn	Lys	Asn	Lys	Ser	Gly	Asn	Ala	Gly	Ile	Lys	Ser	Tyr	Asp	Thr
	210					215					220				
Gln	Thr	Thr	Gln	Glu	Ile	Cys	Glu	Glu	Cys	Glu	Glu	Gly	His	Asp	Lys
	225				230					235					240
Ile	Asn	Lys	Asn	Lys	Ser	Gly	Asn	Ala	Gly	Ile	Lys	Ser	Tyr	Asp	Thr
			245						250					255	

Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu Gly His Asp Lys
 260 265 270
 Ile Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr
 275 280 285
 Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys
 290 295 300
 Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr
 305 310 315 320
 Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu Glu His Gly Asn
 325 330 335
 Leu Asn Lys Asn Lys Ser Gly Lys Ala Gly Ile Lys Ser His Asn Thr
 340 345 350
 Gln Thr Pro Leu Lys Lys Lys Asp Phe Cys Lys Glu Gly Cys His Gly
 355 360 365
 Cys Asn Asn Lys Pro Glu Asp Asn Glu Arg Asp Pro Ser Ser Pro Asp
 370 375 380
 Asp Asp Gly Gly Cys Glu Cys Gly Met Thr Asn His Phe Val Phe Asp
 385 390 395 400
 Tyr Lys Thr Thr Leu Leu Leu Lys Ser Leu Lys Thr Glu Thr Ser Thr
 405 410 415
 His Tyr Tyr Ile Ala Met Ala Ala Ile Phe Thr Ile Ser Leu Phe Pro
 420 425 430
 Cys Met Phe Lys Ala Phe Leu Gly Ser Ser Gly Gly Ser Gly Ser Lys
 435 440 445
 Leu Thr Asp Asp Ile Lys Lys Ala Phe Asp Glu Cys Lys Ser Asn Ala
 450 455 460
 Ile Ile Leu Lys Lys Lys Ile Leu Asp Asn Asp Glu Asp Tyr Lys Ile
 465 470 475 480
 Asn Phe Arg Glu Met Val Asn Glu Val Thr Cys Ala Asn Thr Lys Phe
 485 490 495
 Glu Ala Leu Asn Asp Leu Ile Ile Ser Asp Cys Glu Lys Lys Gly Ile
 500 505 510
 Lys Ile Asn Arg Asp Val Ile Ser Ser Tyr Lys Leu Leu Leu Ser Thr
 515 520 525
 Ile Thr Tyr Ile Val Gly Ala Gly Val Glu Ala Val Thr Val Ser Val
 530 535 540

Ser Ala Thr Ser Asn Gly Thr Glu Ser Gly Gly Ala Gly Ser Gly Thr
545 550 555 560

Gly Thr Ser Val Ser Ala Thr Ser Thr Leu Thr Gly Asn Gly Gly Thr
565 570 575

Glu Ser Gly Gly Thr Ala Gly Thr Thr Thr Ser Ser Gly Thr Glu Ala
580 585 590

Gly Gly Thr Ser Gly Thr Thr Thr Ser Ser Gly Ala Ala Ser Gly Lys
595 600 605

Ala Gly Thr Gly Thr Ala Gly Thr Thr Thr Ser Ser Glu Gly Ala Gly
610 615 620

Ser Asp Lys Ala Gly Thr Gly Thr Ser Gly Thr Thr Thr Ser Ser Gly
625 630 635 640

Thr Gly Ala Gly Gly Ala Gly Ser Gly Gly Pro Ser Gly His Ala Ser
645 650 655

Asn Ala Lys Ile Pro Gly Ile Met Thr Leu Thr Leu Phe Ala Leu Leu
660 665 670

Thr Phe Ile Val Asn
675

<210> 145

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 145

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26

<210> 146

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 146

cataactcga gtcacatg aactttcagg

30

<210> 147

<211> 30

<212> DNA

<213> Artificial Sequence

<220>
 <223> Primer

 <400> 147
 gatgttatca ctaggaccgt ttcatacacc 30

 <210> 148
 <211> 30
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer

 <400> 148
 cataagaatt catcagtgtc tggccagtgg 30

 <210> 149
 <211> 31
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 <213> Artificial Sequence

 <220>
 <223> Primer

 <400> 149
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 <210> 150
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 <212> DNA
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 <220>
 <223> Primer

 <400> 150
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 <210> 151
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 <220>
 <223> Primer

 <400> 151
 ctgagagtga aggatgcgtc ttccacagag 30

 <210> 152
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<220>
 <223> Primer

 <400> 152
 ctcgaactcg agctacagaa agtaggatac 30

 <210> 153
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 <213> Artificial Sequence

 <220>
 <223> Primer

 <400> 153
 cattttatta cattcttttt aacaagtgg 29

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 <212> DNA
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 <220>
 <223> Primer

 <400> 154
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 <212> DNA
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 <220>
 <223> Primer

 <400> 155
 cgcctcactc tgactttggc aacaaac 27

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 <211> 36
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 <220>
 <223> Primer

 <400> 156
 cttgtagaat tcactagaaa gaacttgta gttggg 36

 <210> 157
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<213> Artificial Sequence

<220>

<223> Primer

<400> 157

gagggctatt tagatctcga tttgaattcc

30

<210> 158

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 158

caatactcga gttatcaggc acgagcattc

30

<210> 159

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 159

ggttctcggt tctctgagat ggggtcaaga ttctctgtg

39

<210> 160

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 160

ccaatagaat tcatcaacct ggggcatggg gtgtag

36

<210> 161

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 161

cgctcactc tgactttggc aacaaac

27

<210> 162

<211> 36

<212> DNA
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<220>
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<400> 162
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36

<210> 163
<211> 1906
<212> DNA
<213> Babesia microti

<400> 163
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gccgatgcc aagtaacccc ttctaccccc aataccaatg tgaacatcaa aacaattatc 180
agcaagatta agaaaatttt gatgataagt gagactatct catccacagc tcttgcaagt 240
ttatctgcag tattaagcat tcttggtagg gggacttcca caaatgtcat tccggaacgt 300
ctaactagta tcgttggtga tttgaaatcg gcaactgttc cacaggaagt ggcgcttaag 360
aatggagttt acaagttgaa ggaccaattt aagctaacgc acaagatgat acctgttttt 420
ggcagcgtgc aactgcagat tccagagaaa tcaacagtcg tgcagataag ttagtagag 480
catgaaaatg atacaaaaat ggcaatcatc acccttgatg atcattcgaa attgactttg 540
gaaaggggtg ttctttcaga aacccttact gttgttggtt taaccacac cacacaagat 600
ccactggatg tattgctatc aatatttgtc aagatggata atacaacgga tgatggggtt 660
atggagggtc atttagatct cgatttgaat tccaagattg gtaactttat ttcgggccatc 720
gaactcactg acctgaccaa cacggtaaaa tcagcgcgag tccaccctcc ccaactaaaa 780
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acggatgtca acggcaagaa taaggttcct gcagagctta ccaaggcaat atgcggcaaa 1140
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gacaagagcc ttgccagtgt tggcattata actaactacg gtccaagtgg agactatgag 1560
ttgttgagat acatgcaagt tgagggaagg aagaattatt tcaaactcgt acaggggcca 1620
gaaataacag ctgattatat tggatctggg ttgactaaac acaagaggct gacctgaat 1680
ggcgccctca ccggttcaat tggatttgaa accaactaca aggaatcgat actcttcaat 1740
gagtttatgc gtccaaccaa caagatagtc accctcttct atacggatag tgaaactgtc 1800
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ggtgccttcc caattgaaga atcatctcct gaaagttcat tgatga 1906

<210> 164
<211> 711
<212> DNA
<213> Babesia microti

<400> 164

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tatgagcaat ctggttttaca atctagcaaa tttgttttga gggatgaccc agaattttatt 180
attcctcaaa atcgaagtag tacttatata gtcaatgaca taacatataa atcatttgat 240
atttctagtg ccgatgataa cgaattttta aaaatatcat taagtgatgg gagcatggtg 300
tacaccaata atccagattc caaaattttac atcagcgaag ttaagggttg tgagataaca 360
ataccaataa atataacatc acaatataca ctgatcaaat tatcatttaa tgggtgaattg 420
gttgagttgt atactacagg atgttttcggt gaacataata ttaaaaagtt taggaaagta 480
ggttctacct ataatagat atctaacgct tttgacattg tgccttggtat tccagctcat 540
tttgtcgtga ctacagaaagt ggatttttct ataccttttg atttatttga atcaaattat 600
cacagcattt tactaccagc aggtgtgaac cattctatcc acattaatac tgaacagggt 660
aatgtggatt cagttgtttt tttcttgaat ccactggcca agcactgatg a 711

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<210> 165

<211> 1248

<212> DNA

<213> Babesia microti

<400> 165

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aaacagagag caacatctac aacaacaatt attattgaaa ctaatgctaa agatgtggat 120
gagttagtgaa aaaaatttgc aacaattgca tcttttgatg ataagttcaa gaacgtattc 180
tttgataaatt ctgttattga tgaaattgtc aaaacgttgg aaaagatgaa ggttgagtca 240
gatactgtat tacctagttg caatggaatc cagaccactg aaaactctag tactgaccca 300
tatacagtat tatcaaaact tataaagaaa attaacgact ccataatcag acctatgact 360
tctcggctga tcaacaaatc ctttccggag ttgtgcaagt tgtttataaa aatgcccgat 420
gtcgactcca acaaatttat ggctttggat gtggacataa gcaacactct tgtaaacagg 480
agagtcagat attctgatgg cagattttacc attgtaagca ctgggtccaa ttttagatac 540
acattggcac caactgccgc tggatcatgat ttgtctctct tctcccaatt gccaatctca 600
atgattacgg tcacatcgcc tcaggagcag gcacttacat cttgcgtcag tcatggtaac 660
gaattcagca tagtaagcac tgcaggcaag acaacttaca ctacacaatc taagttggtg 720
tcaacttttca agttatctgc ggagacgtta agggatttta atgaagctag atttgcactt 780
ggtaacatga ctgatagtgc taataaatct aaagcttttg aggtctacaa atcgacacta 840
actactatga aatcaatatc agtcgaattg gaaaagattt ttggcatatt aaaatcaact 900
ccgaatatta cttttgaatc agttgtttct aaatacaaat tgactgggtg taatacagtt 960
gatactgcca atgctgatgt gatcaacgag acaatgtttg acgatttgct caaggcaatt 1020
tctcctatacc tatactccct catatctata atttttccgg aggatattaa aggtcaagggt 1080
acaagtgaag gtcaacaaac aagtggaggt caggatacaa atgagacaat tttctcatac 1140
ctatactccc tcatatctat aatttttccg gaggatatta aaggtgccga attcgatatc 1200
aagcttatcg ataccgtcga cctcgagcac caccaccacc accactga 1248

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<210> 166

<211> 1842

<212> DNA

<213> Babesia microti

<400> 166

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ggtgacaaaa gtgcgttgaa tgatgaggga ttgatgaggt ttatatcgat gaccagtggg 180
tttatcgatg acctgaatt agtttttagat gagttatcca agcacagttt gcttataaat 240
aacgaagggtg ccaagagcat gctatcctct ctcatactaa gcttccgtta tattaatcac 300
ataagaaatt tgatcaatgg tattttacct ggattgaata acccatcatc gtccattggt 360

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gagacagcac aagaaacaac tgaaccctcc actcccactc ccactcccag cacacagaca 420
 atcctgaaac cgaagggatc cgagataagg ggctatataa taaaagttga tcaaacagct 480
 aatctcatca cattcataga tgcattgatc aaggagttga acgttcatat taaacagaca 540
 acaacttcgt ctgttggttg cactaaagaa actaatggca ctaccagtgg ttctcctgaa 600
 agcaatcccg gttccaccga ttcaggttct attcaagctg aggtggcgga actattgaaa 660
 aaatttgcaa caattgcatc ttttgacgag aagttcacga acttacacat taataaacct 720
 tttgccgatg cacttattaa aaggttgaat gaaataaagg ctgaactatc atctaatagt 780
 ggaaccctc ccaaattacc cgatataatca tgtttaagac tatcagaaat tgtgcagaaa 840
 cttaaccgtt taatcaaatt taatacttct cggctgatca acaaatcctt tccggagttg 900
 tgcaagttgt ttataaaaaat gcccgatgtc gactccaaca aatttatggc tttggatgtg 960
 gacataagca acactcttgt aaacaggaga gtcagatatt ctgatggtag atttaccatt 1020
 gtaagcactg ggtccaattt tagatacaca ttggcaccaa ctgccgctgg tcatgatttg 1080
 tctctcttct cccaattgcc aatctcaatg attacggtca catcgctca ggagcaggca 1140
 cttacatctt gcgtcagtca tggtaacgaa ttcagcatag taagcactgc aggcaagaca 1200
 acttacacta cacaatctaa gttgttgta cttttcaagt tatctgcgga gacgttaagg 1260
 gattttaatg aagctagatt tgcacttggg aacatgactg atagtgctaa taaatctaaa 1320
 gctttggagg tctacaaatc gacactaact actatgaaat caatatcagt cgaattggaa 1380
 aagatttttg gcatattaaa atcaactccg aatattactt ttgaatcagt tgtttctaaa 1440
 tacaaattga ctggtgttaa tacagttgat actgccaatg ctgatgtgat caacgagaca 1500
 atgtttgacg atttgtccaa ggcaatttcc tcatacctat actccctcat atctataatt 1560
 tttccggagg atattaaagg tcaaggtaaca agtgaagggtc aacaaacaag tgaagggtcaa 1620
 caaacaagtg aagggtcaaca aacaagtgga gatcaggata caagtggagg tcaggatata 1680
 aatgagacaa ttttctcata cctatactcc ctcatatcta taatttttcc ggaggatatt 1740
 aaagggtcaag gtacaagtgc tcaattattg gagtatagaa ctcaattggc atctctgagc 1800
 aagatcaaat ctctcagaaa aaaaataaaa agaaggctct ga 1842

<210> 167

<211> 918

<212> DNA

<213> Babesia microti

<400> 167

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 cttatgatcg cttttaacga ggctaaaaaa atgtatgcaa aattttctga acagatcacg 180
 gacactatga ttcatacctg caaaaatagt attgatatac tagaagcaga tgagaagaat 240
 ggtggtcata aaaattacct tgaaaagaaa gaaattgagc tcaaaagtaa aattgtggaa 300
 tttaacgcca ttttttcaaa cattgattta aataatagta cggttaaaaa tgaaataatt 360
 aaactgctta atgatataat cactatctct accgatatta agtcaattgt tgatgaaata 420
 tactataagg ctcttggtac aattgaagggt gaaaatgctg aaaattttga gtatgaaatt 480
 aagaaaaaga aagctgaact acttagaaac ctgctgaatg ataattattaa accaattatg 540
 ggatatttaa ctgagatata caatatgcac ataccaatta tatcaaataa aagcgaattt 600
 atattagaaa ataatacagaa ttttggcact aattttaatg acatttttaa tgaagtgaat 720
 ggtgcaattg aagaatttaa taaaactatt gacgtcatga ataacaccat tggggacctt 780
 ggtattgtta ttgacagcgg tattatttca agcataaaat catatatttc cacaatcgcc 840
 aagatttcta attcaataat ccctggacaa atggcactag tttttactgc attaatatta 900
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<210> 168

<211> 696

<212> DNA

<213> Babesia microti

<400> 168

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accgccgctc aatcaacaac agctgtctaca tcaacaacag ctgtctacatc aacaacatct 180
gtacatcaa caacatctgc tacatcaaca acagctacca catcaacaac aactgccaca 240
tcaacaacaa ctgccacatc aacaacagct accacatcaa caacagctgc cacatcaaca 300
atctctccgt ctctggagac cacacaagat gttgctgtca caaatattgt gaatcttaac 360
ataaacgaaa taggatttgt tgatcaagtt ccagagggtc tttcttctag ttacgttttt 420
tctactgatg gaatctttac caaagttacc ccagctacag ggttttcaat tggttgtgta 480
atatttggca atcaattaat tccacagtcc atggatgtta tcactaggac cgtttcatac 540
accactaaat atcctttgat tgttgttagg attcaagata agacttcgag ttctacttca 600
accgtttact atgagcaatc tggtttataa tctagcaaat ttgttttgag ggatgaccca 660
gaattttacat cccaactaac aagtcttttc tagtga 696

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<210> 169

<211> 786

<212> DNA

<213> Babesia microti

<400> 169

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accatgtccc catcccagtc cctctgatgg tctcatgcc ctctctctcag ttcttggtg 180
ctccccacc cccgccacat ccccatcaag gactgccggc tctcatactg ctacccatgc 240
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tccgacgtca cctactcgct gctgtgcctg ctctgcggcc gcgacggtcc ggcgggcgca 480
tgccaaacct gcggggccacg cgtggccttc gtcccgcgtc aggcagggtt gcgagaacgc 540
gccgccacgc tgctgcacct gcggcgccgc gcgcgctata ccgtgcgcgt ggcgcgcgtc 600
aacggtgtct caggcccagc ggccgcgcgc gaagccacct acgcgcaggt caccgtgtcc 660
accggaccgc gaggtgaggc cacgcgcgcc agcggagtcc gtccccctcc ccaaccgcag 720
ttccctctat gcattccaag tcattcagga acccacgtga ctacaccca tgccccaggt 780
tgatga 786

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<210> 170

<211> 561

<212> DNA

<213> Babesia microti

<400> 170

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gtccaccctc cccaactaaa agtgttggct ctgaagtttg gcaacaagat cgttgatgtc 180
gaggagacag gcaggacatt tgttacattt gatgagaagt tgaattcaat agaaataatt 240
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acaacctaca ttggacatgc ctctacgtac acacttcccg aagtgtttac cagggtcatta 360
tgttgtaaag aggacttatg tacgcttgac attacggatc tattgttgaa agagattagt 420
gctaagaaat tggaggagtg taggaagaag aatgcatcta gtggtactcc atctggtggt 480
acaccttcta atgttccaga ggagtgtgta attagaacca acttacagat ggttatgaag 540
aagaatgctc gtgcctgata a 561

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<210> 171

<213> Babesia microti

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gctacatcaa	caacatctgc	tacatcaaca	acagctacca	catcaacaac	aactgccaca	180
tcaacaacaa	ctgccacatc	aacaacagct	accacatcaa	caacagctgc	cacatcaaca	240
atttctccgt	ctctggagac	cacacaagat	gttgctgtca	caaataattgt	gaatcttaac	300
ataaacgaaa	taggattttgt	tgatcaagtt	ccagagggtc	tttctttctag	ttacgttttt	360
tctactgatg	gaatctttac	caaagttacc	ccagctacag	ggtttttcaat	tggtttgtgta	420
atattttggca	atcaattaat	tccacagtc	atggatgtta	tcaactaggac	cgttttcatac	480
accactaaat	atcctttgat	tgttgtttagg	attcaagata	agacttcgag	ttctacttca	540
accgtttact	atgagcaatc	tggttttacia	tctagcaaat	ttgttttgag	ggatgaccca	600
gaattttatta	ttcctcaaaa	tcgaagtagt	acttatacac	tcaatgacat	aacatataaa	660
tcatcttgata	ttcttagtgc	cgatgataac	gaatttttaa	aaatatcatt	aagtgatggg	720
agcatgttgt	acaccaataa	tccagattcc	aaaatttaca	tcagcgaagt	taaggttggt	780
gagataacaa	taccaataaa	tataacatca	caatatacac	tgatcaaatt	atcattttaat	840
ggtgaattgg	ttgagttgta	tactacagga	tgtttcgggtg	aacataatat	ttgatga	897

<213> Babesia microti

Met	Gln	His	His	His	His	His	His	Asp	Glu	Leu	Asn	Leu	Asp	Gln	Ala
				5					10					15	
Thr	Ile	Arg	Thr	Leu	Val	Ala	Pro	Leu	Glu	Glu	Ile	Lys	Asn	Glu	Leu
				20				25					30		
Lys	Thr	Ile	Ser	Ser	Gln	Lys	Ile	Ala	Asp	Ala	Thr	Val	Thr	Pro	Ser
				35			40					45			
Thr	Pro	Asn	Thr	Asn	Val	Asn	Ile	Lys	Thr	Ile	Ile	Ser	Lys	Ile	Lys
				50		55					60				
Lys	Ile	Leu	Met	Ile	Ser	Glu	Thr	Ile	Ser	Ser	Thr	Ala	Leu	Ala	Arg
65					70				75						80
Leu	Ser	Ala	Val	Leu	Ser	Ile	Leu	Gly	Arg	Gly	Thr	Ser	Thr	Asn	Val
				85				90						95	
Ile	Pro	Glu	Arg	Leu	Thr	Ser	Ile	Val	Val	Asp	Leu	Lys	Ser	Ala	Thr
				100			105					110			
Val	Pro	Gln	Glu	Val	Ala	Leu	Lys	Asn	Gly	Val	Tyr	Lys	Leu	Lys	Asp
				115		120					125				
Gln	Phe	Lys	Leu	Thr	His	Lys	Met	Ile	Pro	Val	Phe	Gly	Ser	Val	Gln
				130		135				140					

Leu Gln Ile Pro Glu Lys Ser Thr Val Val Gln Ile Ser Val Val Glu
 145 150 155 160
 His Glu Asn Asp Thr Lys Met Ala Ile Ile Thr Leu Asp Asp His Ser
 165 170 175
 Lys Leu Thr Leu Glu Arg Val Ile Leu Ser Glu Thr Pro Thr Val Val
 180 185 190
 Gly Leu Thr His Thr Thr Gln Asp Pro Leu Asp Val Leu Leu Ser Ile
 195 200 205
 Phe Val Lys Met Asp Asn Thr Thr Asp Asp Gly Val Met Glu Gly Tyr
 210 215 220
 Leu Asp Leu Asp Leu Asn Ser Lys Ile Gly Asn Phe Ile Ser Ala Ile
 225 230 235 240
 Glu Leu Thr Asp Leu Thr Asn Thr Val Lys Ser Ala Ser Val His Pro
 245 250 255
 Pro Gln Leu Lys Val Leu Ala Leu Lys Phe Gly Asn Lys Ile Val Asp
 260 265 270
 Val Glu Glu Thr Gly Arg Thr Phe Val Thr Phe Asp Glu Lys Leu Asn
 275 280 285
 Ser Ile Glu Ile Ile Thr Phe Glu Asn Asp Gly Thr Met Thr Ser Lys
 290 295 300
 Phe Tyr Ser Arg Glu Ser Leu Asp Pro Thr Thr Tyr Ile Gly His Ala
 305 310 315 320
 Pro Thr Asp Ile Phe Thr Ser Pro Trp Ile Thr Thr His Met His Asn
 325 330 335
 Lys Arg Leu Val Asp Phe Glu Val Pro Phe Glu Ala Ile Phe Asp Asp
 340 345 350
 Lys Leu Ile Ser Tyr Tyr Thr Gly Thr Asp Val Asn Gly Lys Asn Lys
 355 360 365
 Val Pro Ala Glu Leu Thr Lys Ala Ile Cys Gly Lys Glu Asp Val Cys
 370 375 380
 Glu Leu Asn Ile Thr Gly Leu Leu Leu Lys Asp Ile Ser Ala Lys Lys
 385 390 395 400
 Leu Glu Glu Cys Arg Lys Lys Asn Ala Ser Ser Gly Thr Pro Ser Gly
 405 410 415
 Gly Thr Pro Ser Asn Val Pro Glu Glu Cys Val Ile Lys Ser Asn Leu
 420 425 430

Gln Thr Val Met Lys Lys Asp Val Thr Thr Thr Leu Lys Ser Asp Asp
435 440 445

Val Ser Asn Tyr Ser Val Val Ser Ile His Phe Tyr Ile Asp Asn Val
450 455 460

Phe Arg His Asn Thr Ala Phe Gly Arg Ile Lys Ile Gly Asn Leu Asp
465 470 475 480

Leu Pro Ala Phe Ser Ile Gly Phe Ile His Ser Ile Phe Val Glu Arg
485 490 495

Val Leu Met Gly Asp Lys Ser Leu Ala Ser Val Gly Ile Ile Thr Asn
500 505 510

Tyr Gly Pro Ser Gly Asp Tyr Glu Leu Leu Arg Tyr Met Gln Val Glu
515 520 525

Glu Gly Lys Asn Tyr Phe Lys Leu Val Gln Gly Pro Glu Ile Thr Ala
530 535 540

Asp Tyr Ile Gly Ser Gly Leu Thr Lys His Lys Arg Leu Thr Met Asn
545 550 555 560

Gly Ala Ser Thr Gly Ser Ile Gly Phe Glu Thr Asn Tyr Lys Glu Ser
565 570 575

Ile Leu Phe Asn Glu Phe Met Arg Pro Thr Asn Lys Ile Val Thr Leu
580 585 590

Phe Tyr Thr Asp Ser Glu Thr Val Asn Leu Ile Lys Leu His Ser Leu
595 600 605

Glu Asn Val Lys His Gly Val Thr Tyr Ser Ile Tyr Gly Ala Phe Pro
610 615 620

Ile Glu Glu Ser Ser Pro Glu Ser Ser Leu Met
625 630 635

<210> 173

<211> 235

<212> PRT

<213> Babesia microti

<400> 173

Met Gln His His His His His His Asp Val Ile Thr Arg Thr Val Ser
5 10 15

Tyr Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr
20 25 30

Ser Ser Ser Thr Ser Thr Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser
35 40 45

Ser Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Ile Ile Pro Gln Asn
 50 55 60
 Arg Ser Ser Thr Tyr Thr Val Asn Asp Ile Thr Tyr Lys Ser Phe Asp
 65 70 75 80
 Ile Ser Ser Ala Asp Asp Asn Glu Phe Leu Lys Ile Ser Leu Ser Asp
 85 90 95
 Gly Ser Met Leu Tyr Thr Asn Asn Pro Asp Ser Lys Ile Tyr Ile Ser
 100 105 110
 Glu Val Lys Val Gly Glu Ile Thr Ile Pro Ile Asn Ile Thr Ser Gln
 115 120 125
 Tyr Thr Leu Ile Lys Leu Ser Phe Asn Gly Glu Leu Val Glu Leu Tyr
 130 135 140
 Thr Thr Gly Cys Phe Gly Glu His Asn Ile Lys Lys Phe Arg Lys Val
 145 150 155 160
 Gly Ser Thr Tyr Asn Asp Ile Ser Asn Ala Phe Asp Ile Val Pro Trp
 165 170 175
 Ile Pro Ala His Phe Val Val Thr Gln Lys Val Asp Phe Ser Ile Pro
 180 185 190
 Phe Asp Leu Phe Glu Ser Asn Tyr His Ser Ile Leu Leu Pro Ala Gly
 195 200 205
 Val Asn His Ser Ile His Ile Asn Thr Glu Thr Gly Asn Val Asp Ser
 210 215 220
 Val Val Phe Phe Leu Asn Pro Leu Ala Lys His
 225 230 235

<210> 174

<211> 415

<212> PRT

<213> Babesia microti

<400> 174

Met Gln His His His His His His Val Asn Ala Leu Ile Lys Glu Leu
 5 10 15

Asn Ala His Ile Lys Gln Arg Ala Thr Ser Thr Thr Thr Ile Ile Ile
 20 25 30

Glu Thr Asn Ala Lys Asp Val Asp Glu Leu Val Lys Lys Phe Ala Thr
 35 40 45

Ile Ala Ser Phe Asp Asp Lys Phe Lys Asn Val Phe Phe Asp Asn Ser

50					55					60					
Val	Ile	Asp	Glu	Ile	Val	Lys	Thr	Leu	Glu	Lys	Met	Lys	Val	Glu	Ser
65					70					75					80
Asp	Thr	Val	Leu	Pro	Ser	Cys	Asn	Gly	Ile	Gln	Thr	Thr	Glu	Asn	Ser
				85					90					95	
Ser	Thr	Asp	Pro	Tyr	Thr	Val	Leu	Ser	Lys	Leu	Ile	Lys	Lys	Ile	Asn
			100					105					110		
Asp	Ser	Ile	Ile	Arg	Pro	Met	Thr	Ser	Arg	Leu	Ile	Asn	Lys	Ser	Phe
		115					120					125			
Pro	Glu	Leu	Cys	Lys	Leu	Phe	Ile	Lys	Met	Pro	Asp	Val	Asp	Ser	Asn
	130					135					140				
Lys	Phe	Met	Ala	Leu	Asp	Val	Asp	Ile	Ser	Asn	Thr	Leu	Val	Asn	Arg
145						150					155				160
Arg	Val	Arg	Tyr	Ser	Asp	Gly	Arg	Phe	Thr	Ile	Val	Ser	Thr	Gly	Ser
				165					170					175	
Asn	Phe	Arg	Tyr	Thr	Leu	Ala	Pro	Thr	Ala	Ala	Gly	His	Asp	Leu	Ser
			180					185					190		
Leu	Phe	Ser	Gln	Leu	Pro	Ile	Ser	Met	Ile	Thr	Val	Thr	Ser	Pro	Gln
		195					200					205			
Glu	Gln	Ala	Leu	Thr	Ser	Cys	Val	Ser	His	Gly	Asn	Glu	Phe	Ser	Ile
	210					215					220				
Val	Ser	Thr	Ala	Gly	Lys	Thr	Thr	Tyr	Thr	Thr	Gln	Ser	Lys	Leu	Leu
225						230					235				240
Ser	Leu	Phe	Lys	Leu	Ser	Ala	Glu	Thr	Leu	Arg	Asp	Phe	Asn	Glu	Ala
				245					250					255	
Arg	Phe	Ala	Leu	Gly	Asn	Met	Thr	Asp	Ser	Ala	Asn	Lys	Ser	Lys	Ala
			260					265					270		
Leu	Glu	Val	Tyr	Lys	Ser	Thr	Leu	Thr	Thr	Met	Lys	Ser	Ile	Ser	Val
		275					280					285			
Glu	Leu	Glu	Lys	Ile	Phe	Gly	Ile	Leu	Lys	Ser	Thr	Pro	Asn	Ile	Thr
	290					295					300				
Phe	Glu	Ser	Val	Val	Ser	Lys	Tyr	Lys	Leu	Thr	Gly	Val	Asn	Thr	Val
305						310					315				320
Asp	Thr	Ala	Asn	Ala	Asp	Val	Ile	Asn	Glu	Thr	Met	Phe	Asp	Asp	Leu
				325					330					335	
Ser	Lys	Ala	Ile	Ser	Ser	Tyr	Leu	Tyr	Ser	Leu	Ile	Ser	Ile	Ile	Phe

340	345	350
Pro Glu Asp Ile Lys Gly Gln Gly Thr Ser Glu Gly Gln Gln Thr Ser		
355	360	365
Gly Gly Gln Asp Thr Asn Glu Thr Ile Phe Ser Tyr Leu Tyr Ser Leu		
370	375	380
Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Ala Glu Phe Asp Ile		
385	390	395
Lys Leu Ile Asp Thr Val Asp Leu Glu His His His His His His		
405	410	415

<210> 175
 <211> 613
 <212> PRT
 <213> Babesia microti

<400> 175
Met Gln His His His His His His Leu Arg Val Lys Asp Ala Ser Ser
5 10 15
Thr Glu Ala Thr Ile Arg Met Phe Leu Arg Phe Asn Ala Phe Ile Lys
20 25 30
Phe Leu Asn Glu Glu Lys Ser Arg Gly Asp Lys Ser Ala Leu Asn Asp
35 40 45
Glu Gly Leu Met Arg Phe Ile Ser Met Thr Ser Gly Phe Ile Asp Asp
50 55 60
Leu Glu Leu Val Leu Asp Glu Leu Ser Lys His Ser Leu Leu Ile Asn
65 70 75 80
Asn Glu Gly Ala Lys Ser Met Leu Ser Ser Leu Ile Leu Ser Phe Arg
85 90 95
Tyr Ile Asn His Ile Arg Asn Leu Ile Asn Gly Ile Tyr Leu Gly Leu
100 105 110
Asn Asn Pro Ser Ser Ser Ile Gly Glu Thr Ala Gln Glu Thr Thr Glu
115 120 125
Pro Ser Thr Pro Thr Pro Thr Pro Ser Thr Gln Thr Ile Leu Lys Pro
130 135 140
Lys Gly Ser Glu Ile Arg Gly Tyr Ile Ile Lys Val Asp Gln Thr Ala
145 150 155 160
Asn Leu Ile Thr Phe Ile Asp Ala Leu Ile Lys Glu Leu Asn Val His
165 170 175

Ile Lys Gln Thr Thr Thr Ser Ser Val Val Gly Thr Lys Glu Thr Asn
 180 185 190
 Gly Thr Thr Ser Gly Ser Pro Glu Ser Asn Pro Gly Ser Thr Asp Ser
 195 200 205
 Gly Ser Ile Gln Ala Glu Val Ala Glu Leu Leu Lys Lys Phe Ala Thr
 210 215 220
 Ile Ala Ser Phe Asp Glu Lys Phe Thr Asn Leu His Ile Asn Lys Pro
 225 230 235 240
 Phe Ala Asp Ala Leu Ile Lys Arg Leu Asn Glu Ile Lys Ala Glu Leu
 245 250 255
 Ser Ser Asn Ser Gly Thr Pro Pro Lys Leu Pro Asp Ile Ser Cys Leu
 260 265 270
 Arg Leu Ser Glu Ile Val Gln Lys Leu Asn Arg Leu Ile Lys Phe Asn
 275 280 285
 Thr Ser Arg Leu Ile Asn Lys Ser Phe Pro Glu Leu Cys Lys Leu Phe
 290 295 300
 Ile Lys Met Pro Asp Val Asp Ser Asn Lys Phe Met Ala Leu Asp Val
 305 310 315 320
 Asp Ile Ser Asn Thr Leu Val Asn Arg Arg Val Arg Tyr Ser Asp Gly
 325 330 335
 Arg Phe Thr Ile Val Ser Thr Gly Ser Asn Phe Arg Tyr Thr Leu Ala
 340 345 350
 Pro Thr Ala Ala Gly His Asp Leu Ser Leu Phe Ser Gln Leu Pro Ile
 355 360 365
 Ser Met Ile Thr Val Thr Ser Pro Gln Glu Gln Ala Leu Thr Ser Cys
 370 375 380
 Val Ser His Gly Asn Glu Phe Ser Ile Val Ser Thr Ala Gly Lys Thr
 385 390 395 400
 Thr Tyr Thr Thr Gln Ser Lys Leu Leu Ser Leu Phe Lys Leu Ser Ala
 405 410 415
 Glu Thr Leu Arg Asp Phe Asn Glu Ala Arg Phe Ala Leu Gly Asn Met
 420 425 430
 Thr Asp Ser Ala Asn Lys Ser Lys Ala Leu Glu Val Tyr Lys Ser Thr
 435 440 445
 Leu Thr Thr Met Lys Ser Ile Ser Val Glu Leu Glu Lys Ile Phe Gly
 450 455 460

Ile Leu Lys Ser Thr Pro Asn Ile Thr Phe Glu Ser Val Val Ser Lys
465 470 475 480

Tyr Lys Leu Thr Gly Val Asn Thr Val Asp Thr Ala Asn Ala Asp Val
485 490 495

Ile Asn Glu Thr Met Phe Asp Asp Leu Ser Lys Ala Ile Ser Ser Tyr
500 505 510

Leu Tyr Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Gln
515 520 525

Gly Thr Ser Glu Gly Gln Gln Thr Ser Glu Gly Gln Gln Thr Ser Glu
530 535 540

Gly Gln Gln Thr Ser Gly Asp Gln Asp Thr Ser Gly Gly Gln Asp Thr
545 550 555 560

Asn Glu Thr Ile Phe Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe
565 570 575

Pro Glu Asp Ile Lys Gly Gln Gly Thr Ser Ala Gln Leu Leu Glu Tyr
580 585 590

Arg Thr Gln Leu Ala Ser Leu Ser Lys Ile Lys Ser Leu Arg Lys Lys
595 600 605

Ile Lys Arg Arg Leu
610

<210> 176

<211> 303

<212> PRT

<213> Babesia microti

<400> 176

Met Gln His His His His His His His Phe Ile Thr Phe Phe Leu Thr
5 10 15

Ser Gly Asn Val Phe Ala Gly Asn Gly Asp Val Asn Gln Tyr Ser Ser
20 25 30

Asp Phe Gly Arg Ala Leu Asn Asp Leu Met Ile Ala Phe Asn Glu Ala
35 40 45

Lys Lys Met Tyr Ala Lys Phe Ser Glu Gln Ile Thr Asp Thr Met Ile
50 55 60

His Thr Cys Lys Asn Ser Ile Asp Ile Leu Glu Ala Asp Glu Lys Asn
65 70 75 80

Gly Gly His Lys Asn Tyr Leu Glu Lys Lys Glu Ile Glu Leu Lys Ser
85 90 95

Lys Ile Val Glu Phe Asn Ala Ile Phe Ser Asn Ile Asp Leu Asn Asn
100 105 110

Ser Thr Val Lys Asn Glu Ile Ile Lys Leu Leu Asn Asp Ile Ser Thr
115 120 125

Ile Ser Thr Asp Ile Lys Ser Ile Val Asp Glu Ile Tyr Tyr Lys Ala
130 135 140

Leu Gly Thr Ile Glu Gly Glu Asn Ala Glu Asn Phe Glu Tyr Glu Ile
145 150 155 160

Lys Lys Lys Lys Ala Glu Leu Leu Arg Asn Leu Leu Asn Asp Asn Ile
165 170 175

Lys Pro Ile Met Gly Tyr Leu Thr Glu Ile Tyr Asn Met His Ile Pro
180 185 190

Ile Ile Ser Asn Lys Ser Glu Phe Asn Asp Ile Lys Lys Ala Phe Glu
195 200 205

Lys His Glu Leu Glu Ala Asn Val Leu Ile Ser Lys Ile Leu Glu Asn
210 215 220

Asn Gln Asn Phe Gly Thr Asn Phe Asn Asp Ile Leu Asn Glu Val Asn
225 230 235 240

Gly Ala Ile Glu Glu Phe Asn Lys Thr Ile Asp Val Met Asn Asn Thr
245 250 255

Ile Gly Asp Leu Gly Ile Val Ile Asp Ser Gly Ile Ile Ser Ser Ile
260 265 270

Lys Ser Tyr Ile Ser Thr Ile Ala Lys Ile Ser Asn Ser Ile Ile Pro
275 280 285

Gly Gln Met Ala Leu Val Phe Thr Ala Leu Ile Leu Ile Leu Asn
290 295 300

<210> 177

<211> 230

<212> PRT

<213> Babesia microti

<400> 177

Met Gln His His His His His His Arg Leu Thr Leu Thr Leu Ala Thr
5 10 15

Asn Thr Arg Gly Gly Ala Gly Thr Asp Ala Thr Ser Val Ser Ile Ala
20 25 30

Asn Ser Ile Pro Thr Ser Ala Ala Thr Ala Ala Gln Ser Thr Thr Ala
 35 40 45
 Ala Thr Ser Thr Thr Ala Ala Thr Ser Thr Thr Ser Ala Thr Ser Thr
 50 55 60
 Thr Ser Ala Thr Ser Thr Thr Ala Thr Thr Ser Thr Thr Thr Ala Thr
 65 70 75 80
 Ser Thr Thr Thr Ala Thr Ser Thr Thr Ala Thr Thr Ser Thr Thr Ala
 85 90 95
 Ala Thr Ser Thr Ile Ser Pro Ser Leu Glu Thr Thr Gln Asp Val Ala
 100 105 110
 Val Thr Asn Ile Val Asn Leu Asn Ile Asn Glu Ile Gly Phe Val Asp
 115 120 125
 Gln Val Pro Glu Gly Leu Ser Ser Ser Tyr Val Phe Ser Thr Asp Gly
 130 135 140
 Ile Phe Thr Lys Val Thr Pro Ala Thr Gly Phe Ser Ile Gly Cys Val
 145 150 155 160
 Ile Phe Gly Asn Gln Leu Ile Pro Gln Ser Met Asp Val Ile Thr Arg
 165 170 175
 Thr Val Ser Tyr Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln
 180 185 190
 Asp Lys Thr Ser Ser Ser Thr Ser Thr Val Tyr Tyr Glu Gln Ser Gly
 195 200 205
 Leu Gln Ser Ser Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Thr Ser
 210 215 220
 Gln Leu Thr Ser Ser Phe
 225 230

<210> 178

<211> 185

<212> PRT

<213> Babesia microti

<400> 178

Met Gln His His His His His His Glu Gly Tyr Leu Asp Leu Asp Leu
 5 10 15

Asn Ser Lys Ile Gly Asn Phe Ile Ser Ala Ile Glu Leu Thr Asn Leu
 20 25 30

Thr Asn Thr Val Lys Ser Ala Ser Val His Pro Pro Gln Leu Lys Val
 35 40 45

Leu Ala Leu Lys Phe Gly Asn Lys Ile Val Asp Val Glu Glu Thr Gly
 50 55 60
 Arg Thr Phe Val Thr Phe Asp Glu Lys Leu Asn Ser Ile Glu Ile Ile
 65 70 75 80
 Thr Phe Glu Asn Asp Gly Thr Met Thr Ser Lys Phe Tyr Ser Arg Glu
 85 90 95
 Ser Leu Asp Ser Thr Thr Tyr Ile Gly His Ala Ser Thr Tyr Thr Leu
 100 105 110
 Pro Glu Val Leu Thr Arg Ser Leu Cys Gly Lys Glu Asp Leu Cys Thr
 115 120 125
 Leu Asp Ile Thr Asp Leu Leu Leu Lys Glu Ile Ser Ala Lys Lys Leu
 130 135 140
 Glu Glu Cys Arg Lys Lys Asn Ala Ser Ser Gly Thr Pro Ser Gly Gly
 145 150 155 160
 Thr Pro Ser Asn Val Pro Glu Glu Cys Val Ile Arg Thr Asn Leu Gln
 165 170 175
 Met Val Met Lys Lys Asn Ala Arg Ala
 180 185
 <210> 179
 <211> 260
 <212> PRT
 <213> Babesia microti
 <400> 179
 Met Gln His His His His His His Gly Ser Arg Phe Ser Glu Met Gly
 5 10 15
 Ser Arg Phe Ser Val Ser Pro Trp Ala Trp Leu Glu Cys Pro Ser Cys
 20 25 30
 Leu Pro Ser Pro Leu Phe Gln Val Thr Met Ser Pro Ser Gln Ser Pro
 35 40 45
 Arg Trp Ser Ser Cys Pro Pro Leu Ser Ser Trp Leu Leu Pro His Pro
 50 55 60
 Arg His Ile Pro Ile Lys Asp Cys Arg Leu Ser Tyr Cys Tyr Pro Cys
 65 70 75 80
 Arg Val Leu Met Pro Leu Arg Pro Gly Thr Ser Ser Ala Ser Val Pro
 85 90 95
 Ser Arg Pro His Ser Ala Pro Pro His Val Ala Gly Pro Pro Ser Ala

100 105 110
 Pro Arg Asp Leu Gln Tyr Ser Leu Ser Arg Ser Pro Leu Ala Leu Arg
 115 120 125
 Leu Arg Trp Leu Pro Pro Ala Asp Ser Gly Gly Arg Ser Asp Val Thr
 130 135 140
 Tyr Ser Leu Leu Cys Leu Leu Cys Gly Arg Asp Gly Pro Ala Gly Ala
 145 150 155 160
 Cys Gln Pro Cys Gly Pro Arg Val Ala Phe Val Pro Arg Gln Ala Gly
 165 170 175
 Leu Arg Glu Arg Ala Ala Thr Leu Leu His Leu Arg Pro Gly Ala Arg
 180 185 190
 Tyr Thr Val Arg Val Ala Ala Leu Asn Gly Val Ser Gly Pro Ala Ala
 195 200 205
 Ala Ala Glu Ala Thr Tyr Ala Gln Val Thr Val Ser Thr Gly Pro Gly
 210 215 220
 Gly Glu Ala Thr Arg Pro Ser Gly Val Arg Pro Pro Pro Gln Pro Gln
 225 230 235 240
 Phe Pro Leu Cys Ile Pro Ser His Ser Gly Thr His Val Thr Thr Pro
 245 250 255
 His Ala Pro Gly
 260

 <210> 180
 <211> 297
 <212> PRT
 <213> Babesia microti

 <400> 180
 Met Gln His His His His His His Glu Ala Asn Ile Arg Thr Asn Gln
 5 10 15
 Thr Val Arg Ile Tyr Leu Ala Leu Gln Glu Ser Tyr Leu His Thr His
 20 25 30
 Ala His Val Leu Ser Val Cys Thr Ala Thr Ser Thr Thr Ser Ala Thr
 35 40 45
 Ser Thr Thr Ala Thr Thr Ser Thr Thr Thr Ala Thr Ser Thr Thr Thr
 50 55 60
 Ala Thr Ser Thr Thr Ala Thr Thr Ser Thr Thr Ala Ala Thr Ser Thr
 65 70 75 80

Ile Ser Pro Ser Leu Glu Thr Thr Gln Asp Val Ala Val Thr Asn Ile
85 90 95

Val Asn Leu Asn Ile Asn Glu Ile Gly Phe Val Asp Gln Val Pro Glu
100 105 110

Gly Leu Ser Ser Ser Tyr Val Phe Ser Thr Asp Gly Ile Phe Thr Lys
115 120 125

Val Thr Pro Ala Thr Gly Phe Ser Ile Gly Cys Val Ile Phe Gly Asn
130 135 140

Gln Leu Ile Pro Gln Ser Met Asp Val Ile Thr Arg Thr Val Ser Tyr
145 150 155 160

Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr Ser
165 170 175

Ser Ser Thr Ser Thr Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser Ser
180 185 190

Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Ile Ile Pro Gln Asn Arg
195 200 205

Ser Ser Thr Tyr Thr Val Asn Asp Ile Thr Tyr Lys Ser Phe Asp Ile
210 215 220

Ser Ser Ala Asp Asp Asn Glu Phe Leu Lys Ile Ser Leu Ser Asp Gly
225 230 235 240

Ser Met Leu Tyr Thr Asn Asn Pro Asp Ser Lys Ile Tyr Ile Ser Glu
245 250 255

Val Lys Val Gly Glu Ile Thr Ile Pro Ile Asn Ile Thr Ser Gln Tyr
260 265 270

Thr Leu Ile Lys Leu Ser Phe Asn Gly Glu Leu Val Glu Leu Tyr Thr
275 280 285

Thr Gly Cys Phe Gly Glu His Asn Ile
290 295

<210> 181

<211> 25

<212> PRT

<213> B. microti

<400> 181

Thr Gly Thr Ala Gly Thr Thr Thr Ser Ser Glu Gly Ala Gly Ser Asp
5 10 15

Lys Ala Gly Thr Gly Thr Ser Gly Thr
20 25

<210> 182
 <211> 25
 <212> PRT
 <213> B. microti

<400> 182
 Glu Ala Gly Gly Thr Ser Gly Thr Thr Thr Ser Ser Gly Ala Ala Ser
 5 10 15

Gly Lys Ala Gly Thr Gly Thr Ala Gly
 20 25

<210> 183
 <211> 25
 <212> PRT
 <213> B. microti

<400> 183
 Thr Gly Asn Gly Gly Thr Glu Ser Gly Gly Thr Ala Gly Thr Thr Thr
 5 10 15

Ser Ser Gly Thr Glu Ala Gly Gly Thr
 20 25

<210> 184
 <211> 25
 <212> PRT
 <213> B. microti

<400> 184
 Thr Glu Ser Gly Gly Ala Gly Ser Gly Thr Gly Thr Ser Val Ser Ala
 5 10 15

Thr Ser Thr Leu Thr Gly Asn Gly Gly
 20 25

<210> 185
 <211> 25
 <212> PRT
 <213> B. microti

<400> 185
 Tyr Ile Val Gly Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala
 5 10 15

Thr Ser Asn Gly Thr Glu Ser Gly Gly
 20 25

<210> 186

<211> 25
 <212> PRT
 <213> B. microti

<400> 186
 Gly Ile Lys Ile Asn Arg Asp Val Ile Ser Ser Tyr Lys Leu Leu Leu
 5 10 15
 Ser Thr Ile Thr Tyr Ile Val Gly Ala
 20 25

<210> 187
 <211> 26
 <212> PRT
 <213> B. microti

<400> 187
 Thr Cys Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu Ile Ile Ser
 5 10 15
 Asp Cys Glu Lys Lys Gly Ile Lys Ile Asn
 20 25

<210> 188
 <211> 25
 <212> PRT
 <213> B. microti

<400> 188
 Ile Leu Asp Asn Asp Glu Asp Tyr Lys Ile Asn Phe Arg Glu Met Val
 5 10 15
 Asn Glu Val Thr Cys Ala Asn Thr Lys
 20 25

<210> 189
 <211> 27
 <212> PRT
 <213> B. microti

<400> 189
 Pro Ser Gly His Ala Ser Asn Ala Lys Ile Pro Gly Ile Met Thr Leu
 5 10 15
 Thr Leu Phe Ala Leu Leu Thr Phe Ile Val Asn
 20 25

<210> 190
 <211> 25
 <212> PRT

<213> B. microti

<400> 190

Gly Thr Ser Gly Thr Thr Thr Ser Ser Gly Thr Gly Ala Gly Gly Ala
5 10 15

Gly Ser Gly Gly Pro Ser Gly His Ala
20 25

<210> 191

<211> 25

<212> PRT

<213> B. microti

<400> 191

Asp Asp Ile Lys Lys Ala Phe Asp Glu Cys Lys Ser Asn Ala Ile Ile
5 10 15

Leu Lys Lys Lys Ile Leu Asp Asn Asp
20 25

<210> 192

<211> 25

<212> PRT

<213> B. microti

<400> 192

Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Thr Gln Glu Ile
5 10 15

Cys Glu Glu Cys Glu Glu Gly His Asp
20 25

<210> 193

<211> 25

<212> PRT

<213> B. microti

<400> 193

Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn
5 10 15

Lys Asn Lys Ser Gly Asn Ala Gly Ile
20 25

<210> 194

<211> 50

<212> PRT

<213> B. microti

<400> 194

Gly Lys Pro Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys Ser His
 5 10 15

Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Gly Gly Thr Ser Gly
 20 25 30

Thr Thr Thr Ser Ser Gly Ala Ala Ser Gly Lys Ala Gly Thr Gly Thr
 35 40 45

Ala Gly
 50

<210> 195

<211> 26

<212> PRT

<213> B. microti

<400> 195

Gly Lys Pro Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys Ser His
 5 10 15

Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu
 20 25

<210> 196

<211> 25

<212> PRT

<213> B. microti

<400> 196

Leu Asp Asn Leu Leu Arg Leu Thr Ala Gln Glu Ile Tyr Glu Glu Arg
 5 10 15

Lys Glu Gly His Gly Lys Pro Asn Thr
 20 25

<210> 197

<211> 25

<212> PRT

<213> B. microti

<400> 197

Ser Glu Lys Thr Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln Glu
 5 10 15

Ile Tyr Glu Glu Leu Asp Asn Leu Leu
 20 25

<210> 198

<211> 25
 <212> PRT
 <213> B. microti

<400> 198
 Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His
 5 10 15
 Glu Glu Glu His Gly Asn Leu Asn Lys
 20 25

<210> 199
 <211> 26
 <212> PRT
 <213> B. microti

<400> 199
 Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys
 5 10 15
 Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp
 20 25

<210> 200
 <211> 25
 <212> PRT
 <213> B. microti

<400> 200
 Thr Ala Gln Glu Thr Ser Asp Asp His Glu Glu Gly Asn Gly Lys Leu
 5 10 15
 Asn Thr Asn Lys Ser Glu Lys Thr Glu
 20 25

<210> 201
 <211> 25
 <212> PRT
 <213> B. microti

<400> 201
 Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr Gln Thr
 5 10 15
 Thr Gln Glu Ile Cys Glu Glu Cys Glu
 20 25

<210> 202
 <211> 25
 <212> PRT

<213> B. microti

<400> 202

Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly
5 10 15

Ile Lys Ser Tyr Asp Thr Gln Thr Pro
20 25

<210> 203

<211> 25

<212> PRT

<213> B. microti

<400> 203

Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu Gly His
5 10 15

Asp Lys Ile Asn Thr Asn Lys Ser Glu
20 25

<210> 204

<211> 1359

<212> DNA

<213> Babesia microti

<400> 204

taaaatatga	caaaagattt	aatgaacata	ctgacatgaa	tggtattcat	tattattata	60
ttgatggtag	tttacttgcg	agtggcgaag	ttacatctaa	ttttcgttat	atttctaaag	120
aatatgaata	tgagcataca	gaattagcaa	aagagcattg	caagaaagaa	aaatgtgtaa	180
atgtggataa	cattgaggat	aataatttga	aaatatatgc	gaaacagttt	aaatctgtag	240
ttactactcc	agctgatgta	gcgggtgtgt	cagatggatt	ttttatacgt	ggccaaaatc	300
ttggtgctgt	gggcagtgtg	aatgaacaac	ctaatactgt	tggtatgagt	ttagaacaat	360
tcatcaagaa	cgagctttat	tcttttagta	atgaaattta	tcatacaata	tctagtcaaa	420
tcagtaattc	tttcttaata	atgatgtctg	atgcaattgt	taaacatgat	aactatattt	480
taaaaaaaga	aggtgaaggc	tgtgaacaaa	tctacaatta	tgaggaattt	atagaaaagt	540
tgaggggtgc	tagaagttag	gggaataata	tgtttcagga	agctctgata	aggttttagga	600
atgctagtag	tgaagaaatg	gttaatgctg	caagttatct	atccgccgcc	cttttcagat	660
ataaggaatt	tgatgatgaa	ttattcaaaa	aggccaacga	taattttgga	cgcgatgatg	720
gatatgattt	tgattatata	aatacaaaga	aagagttagt	tatacttgcc	agtgtgttgg	780
atggttttga	tttaataatg	gaacgtttga	tcgaaaattt	cagtgatgtc	aataatacag	840
atgatattaa	gaaggcattt	gacgaatgca	aatctaattg	tattatattg	aagaaaaaga	900
tacttgacaa	tgatgaagat	tataagatta	attttaggga	aatggtgaat	gaagtaacat	960
gtgcaaacac	aaaatttgaa	gocctaaatg	atttgataat	ttccgactgt	gagaaaaaag	1020
gtattaagat	aaacagagat	gtgatattca	gctacaaatt	gcttctttcc	acaatcacct	1080
atattgttgg	agctggagtt	gaagctgtaa	ctgttagtgt	gtctgctaca	tctaattggaa	1140
ctggtggtgg	tggagctgct	agtggaaactg	gaactagtgg	aactactacg	tctagtgaag	1200
gtgctggttag	tggtaaagct	ggaactggaa	ctagtggaaac	tactacgtct	agtggaaactg	1260
gtgctggtgg	agctggtagt	ggtggacctg	gtggacatgc	ttctaattgca	aaaatttcctg	1320
gaataatgac	actaactcta	tttgcattat	taacattta			1359

<210> 205

<211> 25
 <212> DNA
 <213> Babesia microti

<400> 205
 aaatgttaat aatgcaaata gagtt 25

<210> 206
 <211> 26
 <212> DNA
 <213> Babesia microti

<400> 206
 caatgaataa tgatacaaat aatgg 26

<210> 207
 <211> 54
 <212> PRT
 <213> Babesia microti

<400> 207
 Tyr Ile Val Gly Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala
 5 10 15
 Thr Ser Asn Gly Thr Gly Gly Gly Gly Ala Ala Ser Gly Thr Gly Thr
 20 25 30
 Ser Gly Thr Thr Thr Ser Ser Glu Gly Ala Gly Ser Gly Lys Ala Gly
 35 40 45
 Thr Gly Thr Ser Gly Thr
 50

<210> 208
 <211> 45
 <212> PRT
 <213> Babesia microti

<400> 208
 Tyr Ile Val Gly Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala
 5 10 15
 Thr Ser Asn Gly Thr Glu Ser Gly Gly Ala Gly Ser Gly Thr Gly Thr
 20 25 30
 Ser Val Ser Ala Thr Ser Thr Leu Thr Gly Asn Gly Gly
 35 40 45

<210> 209
 <211> 452
 <212> PRT
 <213> Babesia microti

<400> 209

Lys Tyr Asp Lys Arg Phe Asn Glu His Thr Asp Met Asn Gly Ile His
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Tyr Tyr Tyr Ile Asp Gly Ser Leu Leu Ala Ser Gly Glu Val Thr Ser
 20 25 30

Asn Phe Arg Tyr Ile Ser Lys Glu Tyr Glu Tyr Glu His Thr Glu Leu
 35 40 45

Ala Lys Glu His Cys Lys Lys Glu Lys Cys Val Asn Val Asp Asn Ile
 50 55 60

Glu Asp Asn Asn Leu Lys Ile Tyr Ala Lys Gln Phe Lys Ser Val Val
 65 70 75 80

Thr Thr Pro Ala Asp Val Ala Gly Val Ser Asp Gly Phe Phe Ile Arg
 85 90 95

Gly Gln Asn Leu Gly Ala Val Gly Ser Val Asn Glu Gln Pro Asn Thr
 100 105 110

Val Gly Met Ser Leu Glu Gln Phe Ile Lys Asn Glu Leu Tyr Ser Phe
 115 120 125

Ser Asn Glu Ile Tyr His Thr Ile Ser Ser Gln Ile Ser Asn Ser Phe
 130 135 140

Leu Ile Met Met Ser Asp Ala Ile Val Lys His Asp Asn Tyr Ile Leu
 145 150 155 160

Lys Lys Glu Gly Glu Gly Cys Glu Gln Ile Tyr Asn Tyr Glu Glu Phe
 165 170 175

Ile Glu Lys Leu Arg Gly Ala Arg Ser Glu Gly Asn Asn Met Phe Gln
 180 185 190

Glu Ala Leu Ile Arg Phe Arg Asn Ala Ser Ser Glu Glu Met Val Asn
 195 200 205

Ala Ala Ser Tyr Leu Ser Ala Ala Leu Phe Arg Tyr Lys Glu Phe Asp
 210 215 220

Asp Glu Leu Phe Lys Lys Ala Asn Asp Asn Phe Gly Arg Asp Asp Gly
 225 230 235 240

Tyr Asp Phe Asp Tyr Ile Asn Thr Lys Lys Glu Leu Val Ile Leu Ala
 245 250 255

Ser Val Leu Asp Gly Leu Asp Leu Ile Met Glu Arg Leu Ile Glu Asn
 260 265 270

Phe Ser Asp Val Asn Asn Thr Asp Asp Ile Lys Lys Ala Phe Asp Glu

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275		280		285
Cys Lys Ser Asn Ala Ile Ile Leu Lys Lys Lys Ile Leu Asp Asn Asp				
290		295		300
Glu Asp Tyr Lys Ile Asn Phe Arg Glu Met Val Asn Glu Val Thr Cys				
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Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu Ile Ile Ser Asp Cys				
	325		330	335
Glu Lys Lys Gly Ile Lys Ile Asn Arg Asp Val Ile Ser Ser Tyr Lys				
	340		345	350
Leu Leu Leu Ser Thr Ile Thr Tyr Ile Val Gly Ala Gly Val Glu Ala				
	355		360	365
Val Thr Val Ser Val Ser Ala Thr Ser Asn Gly Thr Gly Gly Gly Gly				
	370		375	380
Ala Ala Ser Gly Thr Gly Thr Ser Gly Thr Thr Thr Ser Ser Glu Gly				
	385		390	395 400
Ala Gly Ser Gly Lys Ala Gly Thr Gly Thr Ser Gly Thr Thr Thr Ser				
	405		410	415
Ser Gly Thr Gly Ala Gly Gly Ala Gly Ser Gly Gly Pro Ser Gly His				
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Leu Leu Thr Phe				
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<211> 2079

<212> DNA

<213> Babesia microti

<400> 210

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cataaacatt actgtagtag ctctggtaga ttagcatggt gaatctctcg atacctgggc 660
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<212> PRT

<213> Babesia microti

<400> 211

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Leu Asn Ser Ala Ser Ala Gly Asp Val Tyr Glu Ile Ser Ser Gly Asn
20 25 30

Pro Pro Asp Ile Glu Pro Thr Ser Thr Ser Leu Glu Thr Asn Val Val
35 40 45

Thr Asn Tyr Ile Pro Glu Pro Asn Ala Asp Ser Glu Ser Val His Val
50 55 60

Glu Ile Gln Glu His Asp Asn Ile Asn Pro Gln Asp Ala Cys Asp Ser
65 70 75 80

Glu Pro Leu Glu Gln Met Asp Ser Asp Thr Arg Val Leu Pro Glu Ser
85 90 95

Leu Asp Glu Gly Val Pro His Gln Phe Ser Arg Leu Gly His His Ser
100 105 110

Asp Met Ala Ser Asp Ile Asn Asp Glu Glu Pro Ser Phe Lys Ile Gly
115 120 125

Glu Asn Asp Ile Ile Gln Pro Pro Trp Glu Asp Thr Ala Pro Tyr His
 130 135 140
 Ser Ile Asp Asp Glu Glu Leu Asp Asn Leu Met Arg Leu Thr Ala Gln
 145 150 155 160
 Glu Thr Ser Asp Asp His Glu Glu Gly Asn Gly Lys Leu Asn Thr Asn
 165 170 175
 Lys Ser Glu Lys Thr Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln
 180 185 190
 Glu Ile Tyr Glu Glu Leu Asp Asn Leu Leu Arg Leu Thr Ala Gln Glu
 195 200 205
 Ile Tyr Glu Glu Arg Lys Glu Gly His Gly Lys Pro Asn Thr Asn Lys
 210 215 220
 Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu
 225 230 235 240
 Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys
 245 250 255
 Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Thr Gln Glu
 260 265 270
 Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys
 275 280 285
 Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu
 290 295 300
 Thr Ser Asp Ala His Glu Glu Gly His Asp Lys Ile Asn Thr Asn Lys
 305 310 315 320
 Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu
 325 330 335
 Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys
 340 345 350
 Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu
 355 360 365
 Thr Ser Asp Ala His Glu Glu Glu His Gly Asn Leu Asn Lys Asn Lys
 370 375 380
 Ser Gly Lys Ala Gly Ile Lys Ser His Asn Thr Gln Thr Pro Leu Lys
 385 390 395 400
 Lys Lys Asp Phe Cys Lys Glu Gly Cys His Gly Cys Asn Asn Lys Pro
 405 410 415

Glu Asp Asn Glu Arg Asp Pro Ser Ser Pro Asp Asp Asp Gly Gly Cys
 420 425 430

Glu Cys Gly Met Thr Asn His Phe Val Phe Asp Tyr Lys Thr Thr Leu
 435 440 445

Leu Leu Lys Ser Leu Lys Thr Glu Thr Ser Thr His Tyr Tyr Ile Ala
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Met Ala Ala Ile Phe Thr Ile Ser Leu Phe Pro Cys Met Phe Lys Ala
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Phe

<210> 212

<211> 20

<212> PRT

<213> Babesia microti

<400> 212

Asn Ser Ala Ser Ala Gly Asp Val Tyr Glu Ile Ser Ser Gly Asn Pro
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Pro Asp Ile Glu
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<210> 213

<211> 20

<212> PRT

<213> Babesia microti

<400> 213

Pro Pro Asp Ile Glu Pro Thr Ser Thr Ser Leu Glu Thr Asn Val Val
 5 10 15

Thr Asn Tyr Ile
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<210> 214

<211> 20

<212> PRT

<213> Babesia microti

<400> 214

Val Thr Asn Tyr Ile Pro Glu Pro Asn Ala Asp Ser Glu Ser Val His
 5 10 15

Val Glu Ile Gln
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<210> 215
 <211> 20
 <212> PRT
 <213> Babesia microti

<400> 215
 His Val Glu Ile Gln Glu His Asp Asn Ile Asn Pro Gln Asp Ala Cys
 5 10 15

Asp Ser Glu Pro
 20

<210> 216
 <211> 21
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 <213> Babesia microti

<400> 216
 Ala Cys Asp Ser Glu Pro Leu Glu Gln Met Asp Ser Asp Thr Arg Val
 5 10 15

Leu Pro Glu Ser Leu
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<210> 217
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 <213> Babesia microti

<400> 217
 Leu Pro Glu Ser Leu Asp Glu Gly Val Pro His Gln Phe Ser Arg Leu
 5 10 15

Gly His His Ser
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<210> 218
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 <212> PRT
 <213> Babesia microti

<400> 218
 Leu Gly His His Ser Asp Met Ala Ser Asp Ile Asn Asp Glu Glu Pro
 5 10 15

Ser Phe Lys Ile
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<210> 219

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<400> 219
 Pro Ser Phe Lys Ile Gly Glu Asn Asp Ile Ile Gln Pro Pro Trp Glu
 5 10 15

Asp Thr Ala Pro
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<210> 220
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<400> 220
 Glu Asp Thr Ala Pro Tyr His Ser Ile Asp Asp Glu Glu Leu Asp Asn
 5 10 15

Leu Met Arg Leu
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<210> 221
 <211> 20
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 <213> Babesia microti

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 His Ser Ile Asp Asp Glu Glu Leu Asp Asn Leu Met Arg Leu Thr Ala
 5 10 15

Gln Glu Thr Ser
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<210> 222
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 <212> PRT
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 Thr Thr Leu Leu Leu Lys Ser Leu Lys Thr Glu Thr Ser Thr His Tyr
 5 10 15

Tyr Ile Ala Met
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<210> 223
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Cys Gly Met Thr
20